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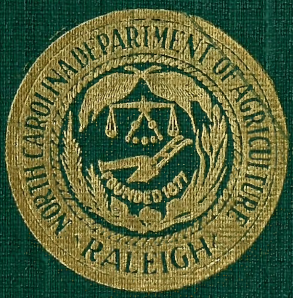

BIENNIAL REPORT 1948-1950

NORTH CAROLINA DEPARTMENT OF AGRICULTURE

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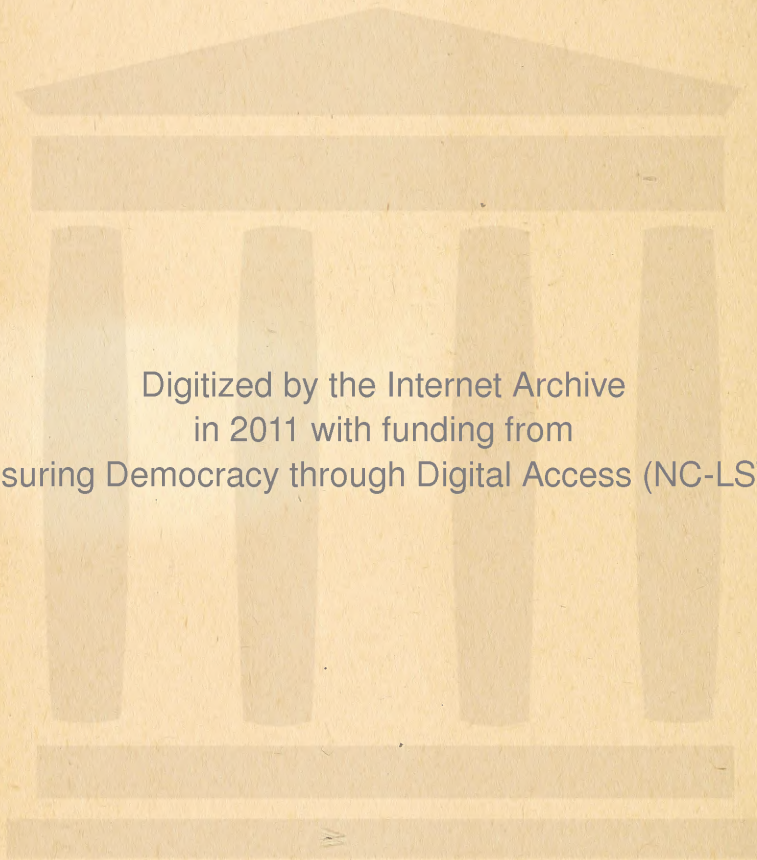

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BIENNIAL REPORT 1948-1950

NORTH CAROLINA DEPARTMENT OF AGRICULTURE

L. Y. BALLENTINE, Commissioner

RALEIGH, N. C.

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LETTER OF TRANSMITTAL

To His Excellency, W. Kerr Scott,
Governor of North Carolina

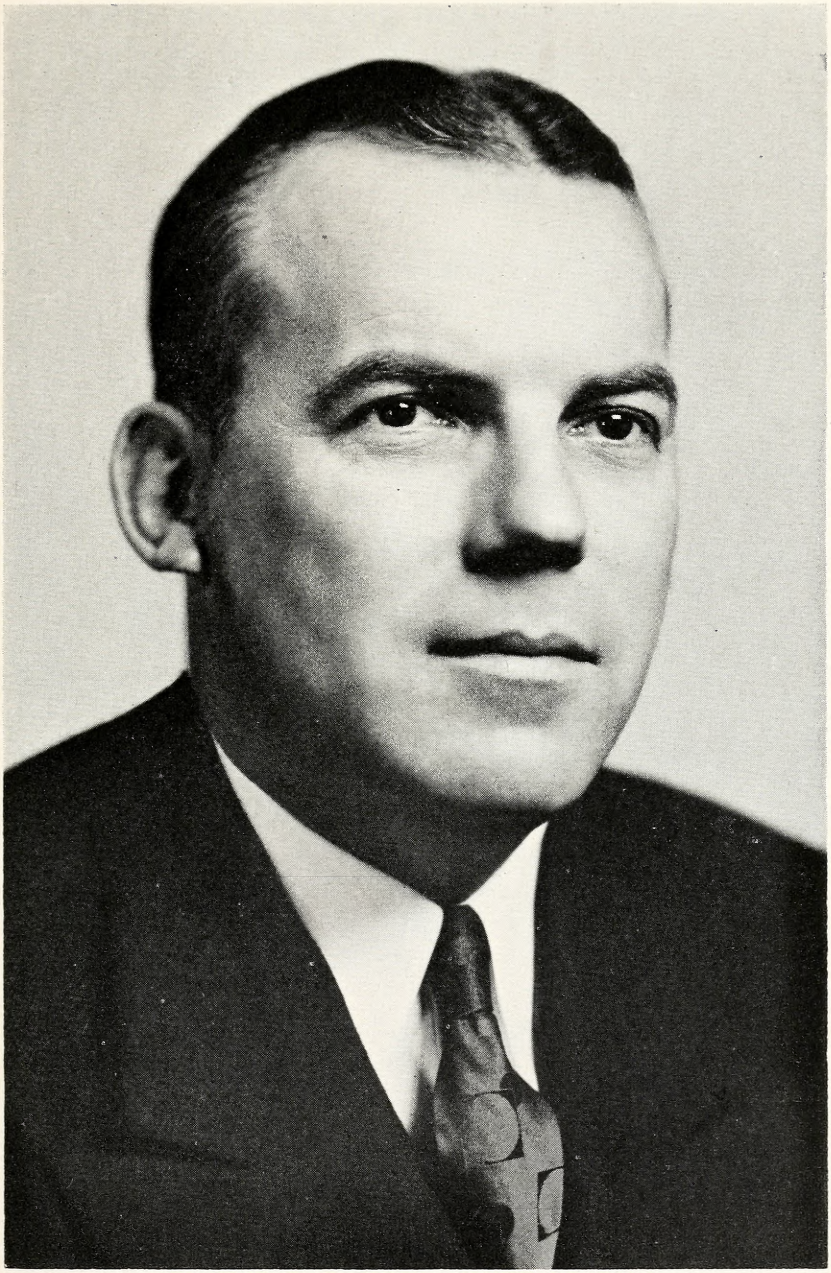
DEAR SIR:

In compliance with provisions of the General Statutes, I submit the following report of the work of the Department of Agriculture for the biennium 1948-1950.

Respectfully,

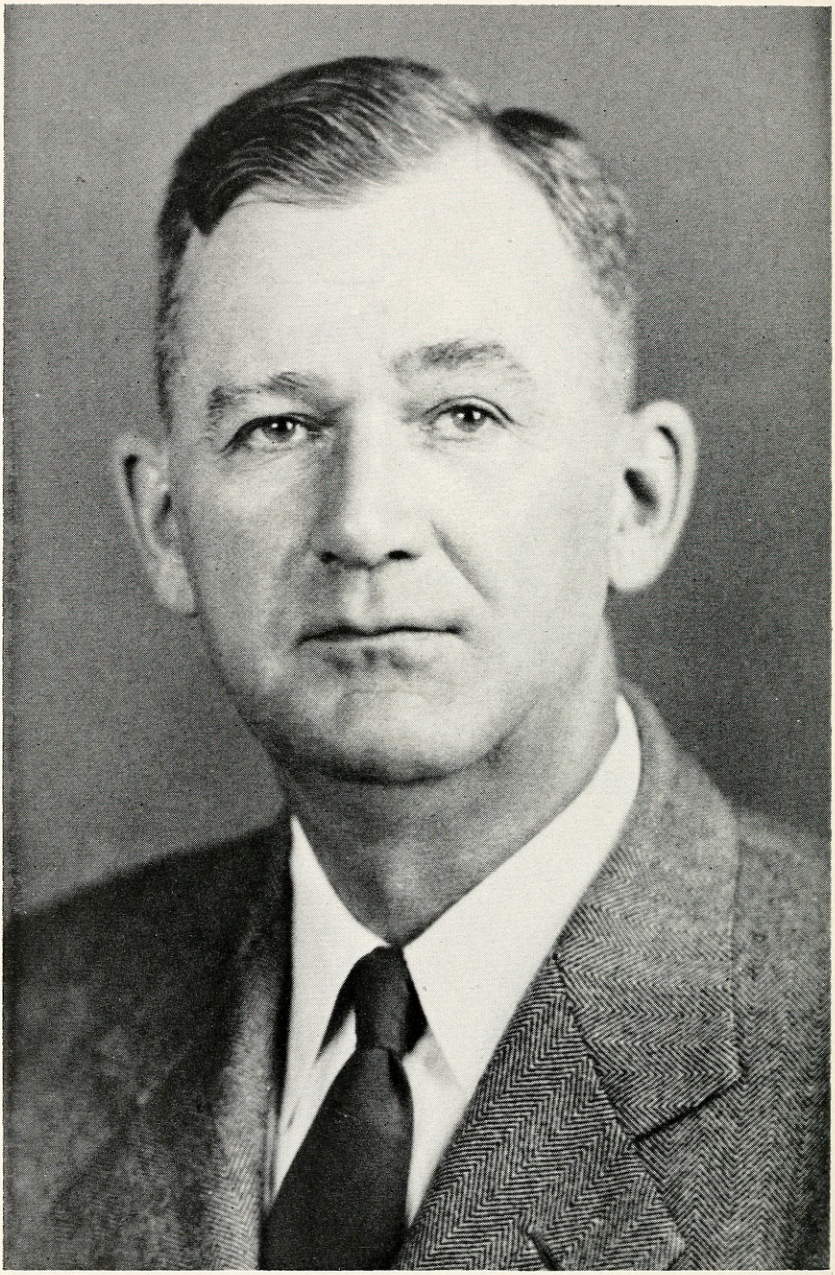
Commissioner of Agriculture.

Raleigh, N. C.



L. Y. Ballentine

Commissioner of Agriculture



A. Hugh Harris

Assistant Commissioner of Agriculture

STATE BOARD OF AGRICULTURE

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A. B. Slagle ..... Franklin
J. E. Winslow[4] ..... Greenville

[1]Appointed by the Governor to replace T. Holt Haywood, Winston-Salem, whose term expired in May, 1949.
[2]Appointed by the Governor to replace David Townsend, Rowland, whose term expired in May, 1949.
[3]Appointed by the Governor to replace Dr. R. E. Earp, Selma, whose term expired in May, 1949.
[4]Appointed by the Governor to replace W. I. Bissette, Grifton, whose term expired in May, 1949.

PERSONNEL

OF THE

STATE DEPARTMENT OF AGRICULTURE

JUNE 30, 1950

L. Y. BALLENTINE, *Commissioner*

ADMINISTRATION

A. HUGH HARRIS.....*Assistant Commissioner*
DORIS WARD BATCHELOR.....*Senior Stenographer Clerk*
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NORMA STANLEY WETMORE.....*Junior Stenographer Clerk*

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MRS. LEE MAE J. PEARCE.....*Senior General Clerk*

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BETTYE TUCKER ROGERS.....*Janitor-Messenger*

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CHRISTOPHER HARRY VENTERS.....*Chief Fertilizer Inspector*
J. W. WOODSIDE.....*Associate Botanist*
LINDSEY ENNIS.....*Senior Seed and Feed Inspector*
C. GRANT.....*Senior Seed and Feed Inspector*
HARVEY C. MCPHAIL.....*Senior Seed and Feed Inspector*
KENNETH M. MINTZ.....*Senior Seed and Feed Inspector*
MILTON ETHERIDGE PEARCE.....*Senior Seed and Feed Inspector*
JOE NEWTON TATE, JR.....*Senior Seed and Feed Inspector*

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JAY P. DAVIS, JR.....*Principal Marketing Specialist*
PAUL LITTON FLETCHER.....*Principal Marketing Specialist*
JOE B. GOURLAY.....*Principal Marketing Specialist*
T. L. GWYN.....*Principal Marketing Specialist*
WENDELL P. HEDRICK.....*Principal Marketing Specialist*
FRED P. JOHNSON.....*Principal Marketing Specialist*
HUGH B. MARTIN.....*Principal Marketing Specialist*
HUGH WALTER MCPHAUL.....*Principal Marketing Specialist*
CANDLER CLIFFORD MILLER.....*Principal Marketing Specialist*
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HOBART W. MYRICK.....*Senior Marketing Specialist*
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RUBY GREY MASSENBURG.....*Senior Stenographer Clerk*
MRS. PHOEBE DOYLE POWERS.....*Senior Stenographer Clerk*
MARJORIE LEE SEXTON.....*Senior Stenographer Clerk*
JOYCE W. WILLIAMS.....*Senior Stenographer Clerk*
MRS. MARGARET B. MITCHELL.....*Senior Stenographer Clerk*
SUSIE OLENE PLEASANTS.....*Junior Stenographer Clerk*
MRS. DOROTHY Y. REAVES.....*Junior Stenographer Clerk*
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MARJORIE D. MOORE.....*Junior Accounting Clerk*
ALICE GWENDOLYN DALTON.....*Typist-Clerk*

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A. S. BYNUM.....*Junior Auditor*
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EDWARD P. VALAER.....*Associate Dairy Specialist*
GILES M. WILLIAMS.....*Associate Dairy Specialist*
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MARY M. WEATHERS.....*Senior Stenographer Clerk*
DELMA B. HALL.....*Laboratory Aid*

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D. L. WRAY, PH.D.....*Senior Entomologist*
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JOHN BOYCE RILEY.....*Japanese Beetle Control*

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MAGDALENE G. BRUMMITT.....*Senior Seed Analyst*
STELLA W. ETHEREDGE.....*Senior Seed Analyst*
MARY ALLEN NICHOLSON.....*Senior Seed Analyst*

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NANCY MARIE BURKE.....*Junior Seed Analyst*
LULA PURVIS GRAY.....*Junior Seed Analyst*
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H. D. MATHESON.....*Senior Chemist*
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DELWIN PHELPS JOHNSON.....*Junior Chemist*
ROY M. PURSER, JR.....*Junior Chemist*
JOHN LEE RAY.....*Junior Chemist*
ROBERT T. TEAGUE, JR.....*Junior Chemist*
ERNEST L. LONG.....*Junior Chemist*
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FRED P. NOOE.....*Senior Food Inspector*
K. W. BALLENTINE.....*Senior Food Inspector*
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VELVA E. HUDSON.....*Principal General Clerk*
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MRS. MARY EASON WEATHERS.....*Senior Stenographer Clerk*
MRS. EVELYN A. FREEMAN.....*Junior Stenographer Clerk*
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JAMES ALLEN CHAPMAN.....*Laboratory Aid*
SAMUEL H. HINTON.....*Laboratory Aid*
WILLIAM SYLVER, JR.....*Laboratory Aid*

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OLAF WAKEFIELD.....*Senior Statistician*
WILLIAM C. HINSON, JR.....*Junior Statistician*
JAMES F. LANKFORD.....*Junior Statistician*
DONALD B. JONES.....*Junior Statistician*
MRS. FRANCES D. CHANDLER.....*Senior Statistical Clerk*
MRS. SARAH FENNER DRAKE.....*Senior Statistical Clerk*
ESPY S. FOWLER.....*Senior Statistical Clerk*
ETHEL I. GARDNER.....*Senior Statistical Clerk*
HELEN E. KORNEGAY.....*Senior Statistical Clerk*
MRS. GLADYS R. SCHELL.....*Senior Statistical Clerk*
LOUISE G. BELVIN.....*Junior Statistical Clerk*
ALMA H. MUSE.....*Senior Stenographer Clerk*
MARY SOUTHALL ALLEN.....*Junior Stenographer Clerk*
MRS. MARGARET S. PINKHAM.....*Junior Stenographer Clerk*
GEORGE TRUETT DENTON.....*Senior General Clerk*
RAYMOND R. ALFORD, JR.....*Multilith Operator*
PEARL K. JOYNER.....*Multilith Operator*
FRANCIS M. NINE, JR.....*Multilith Operator*

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ADOLPH MEHLICH, PH.D.....*Assistant Director*
CHARLES D. WELCH.....*Senior Agronomist*
BARBARA JEAN ERLANDSON.....*Junior Chemist*
MAXINE BISSETTE.....*Junior Chemist*
MARY ELIZABETH GRAYBEAL.....*Junior Chemist*
MURIEL MARIE MOORE.....*Junior Chemist*
MRS. VALYNE F. STARLING.....*Junior Chemist*
MRS. MARTHA B. CAPPS.....*Senior Stenographer Clerk*
MILDRED KIFF LOWE.....*Senior Stenographer Clerk*
AGNES MARIE RABIL.....*Junior Stenographer Clerk*
MRS. MARGARET H. RODGERS.....*Junior Stenographer Clerk*
MARGARET ERNESTELLE STANCIL.....*Typist Clerk*
ARTHUR GILES.....*Laboratory Assistant*
JOHNSON HONEYBLUE.....*Laboratory Aid*

VETERINARY

HAL JUDD ROLLINS, D.V.M.....*Director*
W. R. BAYNES, D.V.M.....*Principal Veterinarian*
JOSEPH D. WOLF, D.V.M.....*Principal Veterinarian*
L. M. GREENE, D.V.M.....*Principal Veterinarian*
R. RUSSELL JETER, D.V.M.....*Senior Veterinarian*
THOMAS FREDERICK ZWEIGART, JR., D.V.M.....*Junior Veterinarian*
G. I. BULLOCK.....*Associate Poultry Specialist*
G. W. IVEY.....*Associate Poultry Specialist*
W. W. KEEVER.....*Associate Poultry Specialist*
L. J. FOURIE.....*Senior Poultry Specialist*
GEORGE D. FULLER.....*Livestock Market Supervisor*
HENRY BRIGHT COLLINS.....*Livestock Market Supervisor*
WILLIAM A. ANDREW.....*Senior Hatchery & Flock Inspector*
JULIUS B. CASHION.....*Senior Hatchery & Flock Inspector*
JESSE J. CAUSBY.....*Senior Hatchery & Flock Inspector*
KENNETH G. CHURCH.....*Senior Hatchery & Flock Inspector*
W. J. ELKINS.....*Senior Hatchery & Flock Inspector*
FRED D. LONG.....*Senior Hatchery & Flock Inspector*
PETER S. PENLAND.....*Senior Hatchery & Flock Inspector*
JOHN ROGER SHIVAR.....*Senior Hatchery & Flock Inspector*
THOMAS L. WELLBORN.....*Senior Hatchery & Flock Inspector*
N. P. MCDUFFIE.....*Senior Hatchery & Flock Inspector*
PHIL R. SANDIDGE.....*Junior Hatchery & Flock Inspector*
JAMES HOWARD WALKER.....*Junior Hatchery & Flock Inspector*
AUBURN L. WRIGHT.....*Junior Hatchery & Flock Inspector*
JOSEPHINE ANNE ALLEN.....*Senior Stenographer Clerk*
GRACE R. JOHN.....*Senior Stenographer Clerk*
MRS. BILLIE MARIE W. CYRUS.....*Junior Stenographer Clerk*
MRS. SUSAN L. BURROUGHS.....*Laboratory Assistant*
FRANK S. HALL.....*Janitor Clerk*
FRANK HOWARD, JR.....*Laboratory Aid*
JAMES U. RICHARDSON.....*Laboratory Aid*

TEST FARMS

CECIL D. THOMAS.....*Director*
MRS. BARBARA MATTHEWS COOPER.....*Junior Accounting Clerk*
J. L. REA, JR.....*Superintendent, Tidewater Test Farm, Plymouth, N. C.*
HERBERT W. ALLEN.....*Senior Farm Foreman*
ELWOOD ARLINGTON ALLEN.....*Senior Herdsman*
FENNER BRYAN HARRIS.....*Senior Herdsman*
MRS. LILLIAN AUSBON BISHOP.....*Typist-Clerk*

J. M. CARR.....*Superintendent, Tobacco Test Farm, Oxford, N. C.*
CLIFTON BLACKWELL.....*Senior Farm Foreman*
CHESTER KEARNEY.....*Feed & Farm Laborer*
ELIZABETH FLOYD.....*Senior Stenographer Clerk*
MRS. MARY POWELL CLARK.....*Junior Stenographer Clerk*
R. E. CURRIN, JR.....*Superintendent, Upper Coastal Plain Test Farm, Rocky Mount, N. C.*
W. C. ALLSBROOK.....*Assistant Superintendent*
PAUL C. BASS.....*Senior Herdsman*
MARGARET W. ALLSBROOK.....*Junior Stenographer Clerk*
HOWARD RUSSELL CLAPP.....*Superintendent, Mountain Test Farm, Waynesville, N. C.*
W. M. WHISENHUNT.....*Senior Farm Foreman*
R. L. YORK.....*Senior Dairyman*
EUGENE C. COUCH.....*Junior Poultryman*
BERNICE HELEN HARRELL.....*Junior Stenographer Clerk*
JAMES ALLEN GRAHAM.....*Superintendent, Upper Mountain Test Farm, Laurel Springs, N. C.*
GORDON W. SHEETS.....*Senior Farm Foreman*
DAN LAFAYETTE TAYLOR.....*Junior Herdsman*
CHARLES T. DEARING.....*Superintendent, Coastal Plain Test Farm, Willard, N. C.*
J. GORDON BLAKE.....*Senior Farm Foreman*
C. O. BOLLINGER.....*Senior Poultryman*
EARL M. WELLS.....*Senior Herdsman*
B. L. WILLIAMS.....*Senior Stenographer Clerk*
J. W. HENDRICKS....*Superintendent, Piedmont Test Farm, Statesville, N. C.*
VESTER NOAH BAIRD.....*Senior Farm Foreman*
ROSE E. BRADFORD.....*Senior Stenographer Clerk*

WEIGHTS & MEASURES

C. D. BAUCOM.....*Superintendent*
JOHN I. MOORE.....*Supervising Inspector*
HENRY H. CASE.....*Senior Inspector*
GEORGE ANDREW CHURCH.....*Senior Inspector*
J. T. JACKSON.....*Senior Inspector*
ELTON PHILLIPS.....*Senior Inspector*
DALTON BENJAMIN RHUE.....*Senior Inspector*
ROY PRESTON WOODALL.....*Senior Inspector*
WILLIAM C. WOODELL.....*Senior Inspector*
S. M. WOOLFOLK.....*Senior Inspector*
CLAUDE J. COWAN.....*Junior Inspector*
DORIS AMELIA BANKS.....*Senior Stenographer Clerk*
IRENE WHITE MEEKINS.....*Senior Stenographer Clerk*
T. WAVELY LUCAS.....*Truck Driver*
JAMES E. WILLIAMS.....*Truck Driver*

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F. B. MEACHAM.....*Senior Curator*
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MARY KNIGHT.....*Principal General Clerk*
MRS. CLARE SCOTT JOHNSON.....*Receptionist & Attendant*
OWEN WOODS.....*Janitor*
LUDIE VIRGINIA ASHE.....*Maid*

HOG CHOLERA WORK

CHARLES R. BORDER, D.V.M.....*Senior Veterinarian*
GEORGE O. MCKEE, JR., D.V.M.....*Junior Veterinarian*

CUSTODIAL

WORTH JEFFERIES.....*Junior Mail Clerk*
ROBERT HARRIS.....*Janitor-Messenger*
THEODORE R. BIRDSALL.....*Janitor-Messenger*

DRUG CONTROL WORK

MRS. IZORA NICHOLSON MCCLURE.....*Senior Stenographer Clerk*

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JOE E. TROWBRIDGE.....*Chief Cotton Classer*
ALEXANDER W. OUTTERBRIDGE.....*Senior Warehouse Examiner*
HAZEL K. COBB.....*Senior General Clerk*
MRS. GERTRUDE T. HOGARTH.....*Senior Stenographer Clerk*
MRS. HALLIE K. MORROW.....*Senior Stenographer Clerk*

GASOLINE & OIL INSPECTION

H. L. SHANKLE.....*Principal Chemist*
HUGH F. HAYES.....*Associate Chemist*
WILLIAM C. ORTH.....*Associate Chemist*
JENNINGS V. WOMBLE.....*Associate Chemist*
J. T. SHAW.....*Associate Chemist*
WILLIAM LAFAYETTE THIGPEN.....*Associate Chemist*
ROBERT L. BURGESS.....*Junior Chemist*
WILLIAM LYNCH CARPENTER.....*Junior Chemist*
JOSEPH DELLA HARTSOE.....*Junior Chemist*
EARL WARREN HESSE.....*Junior Chemist*
WILLIAM R. MARTIN, JR.....*Junior Chemist*
JOSEPH M. JOHNSON.....*Junior Chemist*
THOMAS G. TROGDON.....*Junior Chemist*
PARLEY B. RASMUSSEN, JR.....*Junior Chemist*
T. W. ANDERSON.....*Senior Inspector*
MILTON BAREFOOT.....*Senior Inspector*
MALVER L. BOYETTE.....*Senior Inspector*
LUTHER J. BRITT.....*Senior Inspector*
JOHN A. BYNUM.....*Senior Inspector*
OTTO DUNCAN.....*Senior Inspector*
ODELL A. EVANS.....*Senior Inspector*
GILBERT MITCHELL FARRIOR.....*Senior Inspector*
J. A. GALLOWAY.....*Senior Inspector*
LOVE GUDGER.....*Senior Inspector*
H. H. HATCHER.....*Senior Inspector*
WILLIAM B. PHILLIPS.....*Senior Inspector*
HENRY H. HINES.....*Senior Inspector*
I. L. BLAYLOCK.....*Junior Inspector*
GEORGE ROBERT BOONE.....*Junior Inspector*
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RAY D. SIGMON.....*Junior Inspector*
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William A. Ivey.....*Tax Auditor*
Eric A. Latta.....*Tax Auditor*
Phillip B. Magruder, Jr.....*Tax Auditor*
Clifton G. Moore.....*Tax Auditor*
John A. Moore.....*Tax Auditor*
Rotcher H. Watkins, Jr.....*Tax Auditor*
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Mrs. Lillie B. Marshall.....*Senior Stenographer Clerk*
Mrs. Geraldine E. Hall.....*Senior Stenographer Clerk*
Mrs. Marjorie M. Powell.....*Senior Stenographer Clerk*
Elliott Harrison.....*Janitor-Truck Driver*

BIENNIAL REPORT

OF THE

NORTH CAROLINA DEPARTMENT OF AGRICULTURE

By L. Y. Ballentine

Commissioner of Agriculture

The activities and accomplishments of the North Carolina Department of Agriculture are reviewed against the background of the State's agricultural progress in this report for the biennium which ended June 30, 1950.

It is a story of growth and development in the face of difficult readjustments for farmers which developed as the inevitable aftermath of World War II. The transition, delayed for several years after the end of the war, has manifested itself in various ways.

It has necessitated acreage reductions in a number of crops and this has posed a problem in "displaced" land. The change also has intensified competition and emphasized the need for better marketing practices and facilities.

And, paradoxical though it may seem, post-war conditions have increased rather than diminished the importance of efficient production methods. Farmers, caught between declining prices and continued high costs for labor and supplies, must produce efficiently to stay in business. This lesson was emphasized in 1949, when North Carolina farmers experienced a 10 percent drop in cash receipts from farm marketings—the first such decline since 1940. Their loss in net incomes was even greater.

In spite of these and other difficulties, our farmers have continued to make outstanding progress. They have steadily increased their yields per acre of corn, tobacco, peanuts and, with the exception of the 1949 crop, of cotton. They are using improved seed varieties and more corn hybrids than ever before. They have turned more and more to mechanized equipment and have reduced the number of man-hours of labor required for producing various crops.

Increasing numbers of Tar Heel farmers are adopting soil-conserving practices and many are solving the problem of "displaced" acres by sowing idle land in improved pastures. Al-

though it has been difficult to obtain breeding animals, a good beginning has been made toward building up our livestock industry, and the growth of the State's poultry industry has been little short of phenomenal.

Now, with war clouds gathering over Asia and possibly the world, North Carolina farms are in good shape and our farmers are prepared to do their full share in meeting the nation's requirements for defense.

One of the results of the changing conditions of recent years has been a steadily mounting demand on the services of the State Department of Agriculture. Each of the Department's Divisions—17 in all—has experienced increasingly heavy work loads.

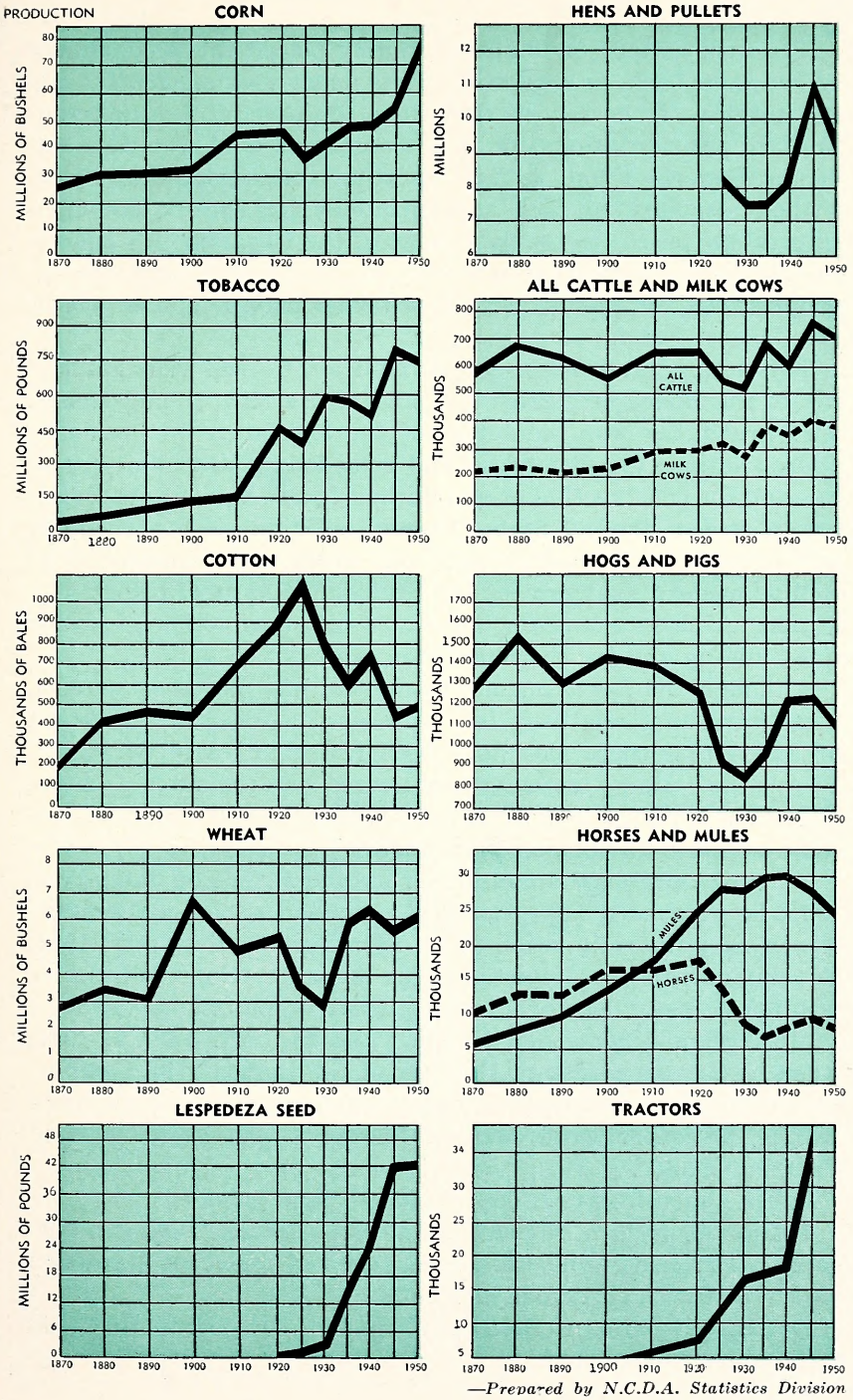
This has been especially true in the case of the Soil Testing Division, which handled twice as many soil samples during the fiscal year just ended as it did in 1947-48. The work load also has increased tremendously in the Seed Laboratory, the Veterinary and Analytical Divisions and other branches of the Department.

The Weights and Measures Division, besides experiencing a general upswing in its customary activities, has had two new responsibilities placed upon it—inspection of gasoline and oil, formerly handled by the Revenue Department, and supervision of liquefied petroleum gas, hitherto under the Insurance Department.

The work of the Markets Division has been expanded to promote new outlets for North Carolina products and to encourage the development of better storage and processing facilities. The results achieved have well justified the emphasis that has been placed on the activities of this agency. Readers of this report are urged to turn to the Markets Division chapter for an illuminating account of progress in this important phase of modern agriculture.

Perhaps the most significant development affecting the Department during the past biennium was the action of the 1949 General Assembly in establishing a new pattern of financing for this branch of the State government. In doing so the legislature wisely recognized two important points: (1) That much of the Department's work is non-agricultural; and (2) that farmers should not be expected to provide the funds for maintaining this Department any more than labor should be expected to provide the revenue to operate the Department of Labor.

N. C. TRENDS IN CROPS, LIVESTOCK AND WORK POWER



—Prepared by N.C.D.A. Statistics Division

The new pattern of financing merely placed this Department on the same basis as most other State departments, agencies and institutions. Thus, for the first time, the General Assembly authorized appropriations for the Department of Agriculture out of the General Fund, as well as from the Agriculture Fund, without earmarking such appropriations for specific non-agricultural purposes. In the past, most of the Department's operating funds had come from its own revenues, with some few appropriations for specific activities being made available out of the General Fund.

This action, far-reaching in its implications, was most gratifying to the Board of Agriculture and to the new Commissioner. Also gratifying was the action of the legislature in providing appropriations for expanding and remodeling State Fair facilities and for construction of an addition to the Agriculture Building to replace the old State Museum building. The new annex will provide much-needed space for offices and laboratories as well as modern quarters for the State's fine natural history collection. Architects and engineers are now completing plans for this building and for the State Fair project.

Although the Department's work load has increased greatly, there have been relatively few increases in personnel. It might be added that there also have been few changes in personnel. Thanks to salary increases authorized by the 1949 General Assembly, the morale of employees has been good and it has become easier to fill occasional vacancies.

When the present Commissioner assumed office on January 6, 1949, he persuaded D. S. Coltrane, who had served as Commissioner since the resignation of W. Kerr Scott in February, 1948, to remain with the Department as Assistant Commissioner, a position he had filled for 11 years under Commissioner Scott.

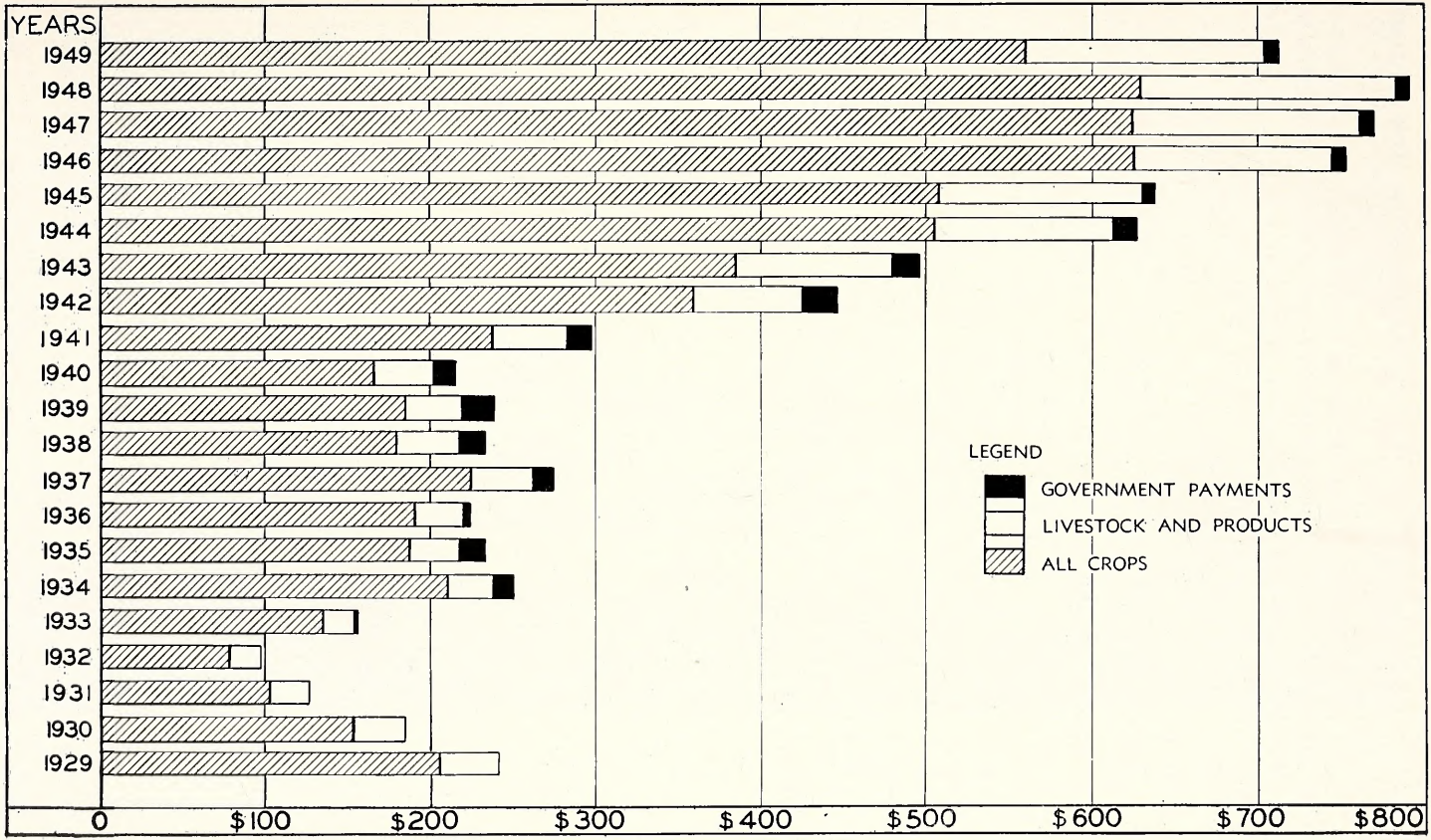
Mr. Coltrane continued in this capacity until July 1, 1949, when he became Assistant Director of the Budget. The Commissioner then was fortunate in obtaining the services of A. Hugh Harris, an experienced farmer, merchant and agronomist of Pamlico County.

Other appointments to key positions have included:

Dr. W. L. Nelson as head of the Soil Testing Division, succeeding Dr. J. Fielding Reed, who resigned to accept a position with the American Potash Institute.

Dr. H. J. Rollins as State Veterinarian succeeding Dr. L. J. Faulhaber, who retired.

SOURCES OF NORTH CAROLINA CASH FARM INCOME 1929-1949



—Prepared by N.C.D.A. Statistics Division

John A. Winfield as head of the Division of Markets succeeding Harry T. Westcott, who resigned to accept an appointment to the State Utilities Commission. (Westcott had served as director of the Markets Division since the death on December 3, 1948, of Randal B. Etheridge, who had been in charge of this division since 1929.)

John T. Richardson as director of the County Farm Census, a new position created by the 1949 General Assembly when it restored this enumeration to an annual basis.

The Commissioner wishes to take this opportunity to express his appreciation to members of the Board of Agriculture for their faithful, cooperative service to the Department and to the State. This is truly a working board, not one in name only, as evidenced by the fact that it has held 12 meetings and has been in session 14 days during the 1948-1950 biennium. It has proved itself both willing and capable of shaping the policies of this Department, and the Commissioner is happy in having such a wise group to share with him the responsibilities of his office.

Many types of farming and all sections of North Carolina are represented on the State Board of Agriculture. Truly a working Board, the group was in session 14 days during the 1948-50 biennium. Shown above, left to right, are: J. Hawley Poole, West End; Commissioner L. Y. Ballentine, ex-officio Chairman; Claude T. Hall, Roxboro; W. B. Austin, Jefferson; Glenn G. Gilmore, Julian; J. Muse McCotter, New Bern; Hoyle C. Griffin, Monroe; O. J. Holler, Union Mills; A. B. Slagle, Franklin; A. Hugh Harris, Assistant Commissioner. Other members of the Board, not shown in this photo, are Miss Ethel Parker, Gatesville, and J. E. Winslow, Greenville.

A. R. Powledge

ACCOUNTS

A. R. Powledge

Chief Auditor

The financial report of the Department and the various divisions is as follows:

DEPARTMENT OF AGRICULTURE
Code 1101

Statement of Disbursements

July 1, 1948 - June 30, 1950

I. Administration

	1949-50	1948-49
Board of Commissioners	$ 1,936.36	$ 3,122.73
Salary—Commissioner	7,500.00	6,975.00
Salaries and Wages	13,942.61	9,981.13
Supplies and Materials	250.00	365.95
Postage, Telephone, Telegraph and Express	1,242.65	994.12
Travel Expense	1,819.70	1,967.78
Printing and Binding	564.75	2,296.65
Repairs and Alterations		49.25
General Expense	246.58	294.44
Equipment	485.23	282.83
Legislative Representative in Washington, D. C.	499.92	499.92
Insurance and Bonding	304.87	585.94
Attorney Fees	50.00	150.00
Total	$ 28,842.67	$ 27,565.74

Accounting Office

Salaries and Wages	$ 15,469.55	$ 12,714.41
Supplies and Materials	248.96	420.38
Printing and Binding	206.14	112.98
Repairs and Alterations	168.16	188.70
Equipment	1,733.30	217.46
Total	$ 17,826.11	$ 13,653.93

Publicity and Publications

Salaries and Wages	$ 11,376.00	$ 10,898.30
Supplies and Materials	414.69	393.49
Postage Permit "Agricultural Review"	1,132.00	1,140.00
Travel Expense	42.70	12.05
Printing "Agricultural Review"	11,649.98	13,725.30
Repairs and Alterations	91.13	29.50
Equipment	46.26	167.76
Total	$ 24,752.76	$ 26,366.40
Total Administration	$ 71,421.54	$ 67,586.07

II. INSPECTION

	1949-50	1948-49
Salaries and Wages	$ 28,251.43	$ 23,469.62
Salaries and Wages—Extra	13,017.26	12,100.55
Supplies and Materials	580.62	696.12
Postage, Tel., Tel., Express	2,164.66	2,137.51
Travel Expense	28,264.17	22,295.70
TOTAL	$ 72,278.14	$ 60,699.50

III. MARKETS

Salaries and Wages	$152,381.63	$118,295.69
Salaries and Wages—Extra	3,803.72	4,885.14
Supplies and Materials	1,857.22	1,607.84
Postage, Tel., Tel., Express	5,307.15	4,599.87
Travel Expense	37,853.79	29,048.54
Printing and Binding	450.57	142.58
Repairs and Alterations	210.82	274.42
Markets News Letter		1,993.51
Subscriptions	179.50	133.70
General Expense	81.15	220.41
Equipment	2,564.31	2,047.08
Reimbursement USDA	900.00	2,840.40
Purchase of Automobile Equipment	1,194.00	
TOTAL	$206,783.86	$166,089.18
Transferred from RMA Fund	27,252.77	
Transferred from General Fund		25,000.00
	$179,531.09	$141,089.18

IV. CREDIT UNION

Salaries and Wages	$ 13,896.00	$ 12,597.00
Supplies and Materials	48.40	71.95
Postage, Tel., Tel., Express	183.27	121.40
Travel Expense	4,379.74	4,308.42
Printing and Binding		
Equipment	23.52	
Transferred to General Fund		2,500.00
TOTAL	$ 18,530.93	$ 19,598.77

V. DAIRY

Salaries and Wages	$ 35,654.11	$ 35,558.94
Supplies and Materials	1,464.57	1,191.74
Postage, Tel., Tel., Express	760.64	409.33
Travel Expense	10,695.34	8,600.41
Printing and Binding	287.77	238.21
Repairs and Alterations	45.60	35.00
General Expense	65.86	65.16
Equipment	145.48	118.45
TOTAL	$ 49,119.37	$ 46,217.24
Transferred from General Fund		15,000.00
		$ 31,217.24

VI. ENTOMOLOGY

	1949-50	1948-49
Salaries and Wages	$ 22,775.40	$ 17,944.87
Supplies and Materials	173.94	224.98
Postage, Tel., Tel., Express	261.98	252.20
Travel Expense	5,469.81	4,210.95
Printing and Binding	313.38	292.80
Subscriptions and Dues	123.88	129.34
Equipment	20.57	250.00
TOTAL	$ 29,138.96	$ 23,305.14

VII. SEED LABORATORY

Salaries and Wages	$ 25,050.00	$ 23,924.14
Salaries and Wages—Extra	5,220.63	2,971.21
Supplies and Materials	1,049.09	580.44
Postage, Tel., Tel., Express	802.34	677.29
Travel Expense	622.01	649.31
Printing and Binding	780.89	894.86
Repairs and Alterations	143.15	205.45
Equipment	497.36	2,322.04
TOTAL	$ 34,165.47	$ 32,224.74

VIII. ANALYTICAL

Salaries and Wages	$115,224.61	$106,605.09
Supplies and Materials	6,105.04	6,546.12
Postage, Tel., Tel., Express	1,236.31	1,005.70
Travel Expense	7,840.70	8,796.50
Printing and Binding	7,041.99	9,525.04
Repairs and Alterations	322.62	184.53
Laundry	15.56	.77
Equipment	752.21	112.89
General Expense	366.23	256.06
Renovation of Laboratory	2,439.04	3,737.95
New Equipment—Vitamin Laboratory	508.60	8,418.93
Insecticide Laboratory	2,439.86	
TOTAL	$144,292.77	$145,189.58
Transferred from General Fund		24,000.00
		$121,189.58

IX. CROP STATISTICS

Salaries and Wages	$ 42,574.39	$ 35,599.65
Salaries and Wages—Extra	14,771.23	2,870.70
Supplies and Materials	8,048.00	2,578.34
Postage, Tel., Tel., Express	496.75	227.79
Travel Expense	3,614.75	1,389.98
Printing and Binding	1,623.39	740.67
Repairs and Alterations	558.98	476.90
Subscriptions and Dues	24.50	36.50
Equipment	654.57	5,369.97
Bonus to Listers	25,966.30	
TOTAL	$ 98,332.86	$ 49,290.50
Transfer from RMA Fund	12,990.91	
	$ 85,341.95	

X. SOIL TESTING

	1949-50	1948-49
Salaries and Wages	$ 31,883.88	$ 29,373.08
Salaries and Wages—Extra	4,923.94	2,036.22
Supplies and Materials	9,552.61	4,975.29
Postage, Tel., Tel., Express	2,061.41	1,090.95
Travel Expense	524.23	949.77
Printing and Binding	85.25	199.47
Equipment	1,234.50	1,375.36
General Expense	381.97	277.20
TOTAL	$ 50,647.79	$ 40,277.34

XI. BLISTER RUST CONTROL

Salaries and Wages	$ 4,631.70	$ 5,345.48

XII. VETERINARY

Salaries and Wages	$104,982.75	$ 93,441.70
Supplies and Materials	937.34	1,061.86
Postage, Tel., Tel., Express	1,555.81	1,147.60
Travel Expense	39,588.08	33,806.60
Printing and Binding	632.42	694.30
Repairs and Alterations	25.00	31.30
General Expense	181.84	95.87
Equipment	509.58	349.27
Clinic on Mastitis		
Diagnostic Lab. A & B	360.00	107.04
TOTAL	$148,772.82	$130,735.54

XIII. TEST FARMS ADMINISTRATION

Salaries and Wages	$ 6,199.30	$ 6,568.20
Supplies and Materials	78.39	152.77
Postage, Tel., Tel., Express	383.18	272.80
Travel Expense	1,112.26	1,058.35
Printing and Binding	177.42	71.97
General Expense	33.08	10.95
Insurance and Bonding	1,960.00	1,260.10
Equipment	570.92	
TOTAL	$ 10,514.55	$ 9,395.14

TIDEWATER TEST FARM

Salaries and Wages	$ 17,481.50	$ 17,887.75
Supplies and Materials	5,272.33	4,605.98
Postage, Tel., Tel., Express	175.03	140.48
Travel Expense	110.04	123.46
Motor Vehicle Operation	1,237.98	1,485.24
Repairs and Alterations	1,499.17	944.84
General Expense	280.75	487.25
Light, Power and Water	338.45	263.43
Equipment	2,950.00	1,796.01
TOTAL	$ 29,345.25	$ 27,734.44

TOBACCO TEST FARM

	1949-50	1948-49
Salaries and Wages	$ 29,839.33	$ 28,781.30
Supplies and Materials	4,888.23	5,127.20
Postage, Tel., Tel., Express	325.83	252.97
Travel Expense	95.79	101.63
Printing and Binding		24.94
Motor Vehicle Operation	742.68	460.27
Light, Power and Water	793.54	683.52
Repairs and Alterations	1,000.00	448.90
General Expense	34.88	421.34
Equipment	2,449.47	1,565.21
TOTAL	$ 40,169.75	$ 37,867.28

UPPER COASTAL PLAIN TEST FARM

Salaries and Wages	$ 29,360.10	$ 30,980.58
Supplies and Materials	11,039.71	10,149.58
Postage, Tel., Tel., Express	340.13	277.64
Travel Expense	557.79	517.74
Motor Vehicle Operation	1,973.75	1,833.92
Light, Power and Water	820.37	680.27
Repairs and Alterations	999.42	952.65
General Expense	50.00	68.13
Equipment	2,268.17	1,926.63
TOTAL	$ 47,409.44	$ 47,387.14

MOUNTAIN TEST FARM

Salaries and Wages	$ 24,605.54	$ 23,070.96
Supplies and Materials	11,713.86	10,615.06
Postage, Tel., Tel., Express	499.36	434.54
Travel Expense	899.97	1,036.92
Printing and Binding	29.63	7.89
Motor Vehicle Operation	492.70	683.80
Light, Power and Water	1,353.35	1,283.51
Repairs and Alterations	1,391.00	934.30
General Expense	1,520.00	1,521.10
Equipment	2,164.18	1,466.95
Purchase of Land		
TOTAL	$ 44,669.59	$ 41,055.03

UPPER MOUNTAIN TEST FARM

Salaries and Wages	$ 16,292.00	$ 13,532.00
Supplies and Materials	6,899.66	6,094.31
Postage, Tel., Tel., Express	360.00	359.90
Travel Expense	797.73	738.97
Printing and Binding	24.61	5.65
Motor Vehicle Operation	874.32	1,219.02
Light, Power and Water	348.59	366.00
Repairs and Alterations	600.00	444.39
General Expense	299.09	325.07
Equipment	1,787.39	8,413.94
Purchase of Land	78.00	
TOTAL	$ 28,361.39	$ 31,499.25

COASTAL PLAIN TEST FARM

	1949-50	1948-49
Salaries and Wages	$ 34,648.00	$ 36,836.44
Supplies and Materials	12,475.00	12,631.55
Postage, Tel., Tel., Express	463.98	422.13
Travel Expense	17.97	60.54
Printing and Binding	37.43	39.63
Motor Vehicle Operation	1,673.04	2,768.12
Light, Power and Water	1,372.87	1,295.99
Repairs and Alterations	1,980.00	1,625.76
General Expense	499.55	412.29
Equipment	1,743.02	2,840.19
Pasture Preparation	1,337.75	111.22
Clearing of Land	2,229.32	3,262.64
Cooperative Plant Industry	2,506.68	2,799.99
TOTAL	$ 60,984.61	$ 65,106.49
Transfer from USDA—Cooperative Agreement	1,692.95	
	$ 59,291.66	

PIEDMONT TEST FARM

Salaries and Wages	$ 20,999.42	$ 20,041.64
Supplies and Materials	3,128.13	2,614.78
Postage, Tel., Tel., Express	113.47	121.30
Travel Expense	431.82	499.62
Printing and Binding	15.35	14.30
Motor Vehicle Operation	746.44	599.27
Light, Power and Water	207.61	217.34
Repairs and Alterations	1,598.12	1,032.41
General Expense	99.00	30.00
Equipment	1,249.46	1,528.38
TOTAL	$ 28,588.82	$ 26,699.04
TOTAL TEST FARMS—OPERATIONS	$290,043.40	$286,743.81

ADDITIONS AND BETTERMENTS—
COASTAL PLAIN TEST FARM

Heating System—Supt. Home	$ 7.50	
Repairs and Alterations	1,998.20	
Storage Building	5,999.36	
Bull Barn and Lot	699.53	
Poultry Building	5,997.62	
TOTAL	$ 14,702.21	$ 1,785.96

ADDITIONS AND BETTERMENTS—
MOUNTAIN TEST FARM

Implement Shed	$ 5,149.00	
Laborer's Dwelling	4,000.00	
Smokehouse Storage for Dwellings		
Irrigation System	1,508.08	
Pasture Improvement	1,499.11	
Superintendent's Dwelling	477.26	
Tobacco Barn	4,340.00	
Tobacco Grading and Storage Room		
TOTAL	$ 16,973.45	$ 5,237.25

	1949-50	1948-49
ADDITIONS AND BETTERMENTS— PIEDMONT TEST FARM		
Laborer's Dwelling	$ 4,998.32	
New Fences	2,498.02	
TOTAL	$ 7,496.34	
ADDITIONS AND BETTERMENTS— TIDEWATER TEST FARM		
Storage Building for Field Crops	$ 2,497.92	
Superintendent's Dwelling		
Addition Fertilizer Storage Building	993.55	
Addition Implement Shed	9,488.66	
Clearing and Drainage	6,992.84	
Beef Cattle Barn	3,000.00	
Silo	1,500.00	
TOTAL	$ 24,472.97	$ 5,280.50
ADDITIONS AND BETTERMENTS— TOBACCO TEST FARM		
Two Laborers' Dwellings	$ 3,118.85	
Fertilizer Laboratory	2,282.79	
Tobacco Packhouse and Equipment	8,922.21	
Gasoline Pump and Tank	329.99	
Repairs and Alterations to Buildings	7,158.04	
TOTAL	$ 21,811.88	$ 2,398.79
ADDITIONS AND BETTERMENTS— UPPER COASTAL PLAIN TEST FARM		
Four Laborers' Dwellings	$ 9,350.00	
Repairs and Alterations to Dwellings	7,757.83	
Crop Storage Building and Equipment		
Tobacco Barn	3,484.48	
Demonstration Commission Unit		
Hog Shelter	793.85	
TOTAL	$ 21,386.16	$ 5,426.26
ADDITIONS AND BETTERMENTS— UPPER MOUNTAIN TEST FARM		
Office Grading and Storage Building	$ 12,270.44	
Two Dwellings	6,000.00	
Drainage	2,765.13	
New Fences	2,222.00	
Silo	1,199.86	
Land Improvement		
Fertilizer House	1,113.50	
Water Line to Farm Buildings		
Burley Tobacco Barn	999.96	
TOTAL	$ 26,570.89	$ 5,103.98
TOTAL ADDITIONS AND BETTERMENTS— TEST FARMS	$133,413.90	$ 25,232.74
TOTAL TEST FARMS	$423,457.30	$311,976.55
Transferred from USDA Cooperative Agreement	1,692.95	
TOTAL	$421,764.35	

XV. WEIGHTS AND MEASURES

	1949-50	1948-49
Salaries and Wages	$ 40,772.58	$ 35,244.02
Salaries and Wages—Extra	1,755.72	1,510.81
Supplies and Materials	1,009.13	377.01
Postage, Tel., Tel.	402.46	390.62
Travel Expense	19,330.29	19,214.88
Printing & Binding	563.62	68.61
Motor Vehicle Operation	2,134.38	1,444.72
Repairs and Alterations	427.87	246.00
Equipment	12,084.05	1,258.25
TOTAL	$ 78,480.10	$ 59,754.92

XVI. STATE MUSEUM

Salaries and Wages	$ 19,051.20	$ 18,317.40
Supplies and Materials	363.24	514.78
Postage, Tel., Tel.	223.64	151.55
Travel Expense	326.08	321.35
Printing and Binding	15.00	193.79
General Expense	105.86	132.00
Equipment	212.55	158.05
TOTAL	$ 20,297.57	$ 19,788.92

XVII. HOG CHOLERA WORK

Salaries and Wages	$ 9,144.00	$ 8,763.00
Supplies and Materials		
Postage, Tel., Tel.		10.00
Travel Expense	4,426.56	4,364.21
Printing and Binding		
TOTAL	$ 13,570.56	$ 13,137.21

XIX. CUSTODIAL

Salaries and Wages	$ 5,832.00	$ 5,580.58
Board of Buildings and Grounds	6,480.00	6,480.00
TOTAL	$ 12,312.00	$ 12,060.58

XX. MISCELLANEOUS

Farming Convention	$ 300.00	
Contribution to Ret. System	39,247.11	$ 30,574.47
Tax Tags and Stamps	3,922.77	20,073.29
Serum for Resale	14,794.03	11,813.20
Workmen's Compensation	424.64	349.15
Motor Vehicle Operation	987.15	691.59
State Fair Exhibit	449.13	461.99
State Fair—Premiums for Youth Groups		
Cooperative Agreement Investigating Limestone Resources in N. C.	927.58	
Purchase of Automobile	1,223.18	4,998.20
Resource-Use Education Film and Radio Fund		3,000.00
TOTAL	$ 62,275.59	$ 71,961.89

XXI. RABIES

Rabies	$ 196.69	$ 370.44

XXII. JAPANESE BEETLE CONTROL

	1949-50	1948-49
Salaries and Wages	$ 1,837.50	$ 10,984.02
Wages, Trap Tenders		4,204.87
Supplies and Materials	5,619.99	8,348.37
Travel Expense	271.09	279.27
Equipment	954.61	
TOTAL	$ 8,683.19	$ 23,816.53

XXIII. WHITE FRINGED BEETLE CONTROL

Supplies and Materials	$ 9,950.85	$ 7,408.83
Equipment		58.97
TOTAL	$ 9,950.85	$ 7,467.80

XXIV. INDEMNITY DISEASED SLAUGHTERED LIVESTOCK

Tuberculosis and Glanders	$ 275.00	$ 150.00
Bangs Disease	12,797.68	14,994.22
TOTAL	$ 13,072.68	$ 15,144.22

XXV. DRUG CONTROL WORK

Salaries and Wages	$ 2,640.50	
Supplies and Materials		
Travel Expense		
Printing and Binding		
Drug—Laboratory Additions and Betterments		
Equipment		
TOTAL	$ 2,640.50	

TOTAL EXPENDITURES	$1,573,053.24	$1,322,038.14
Less: Transfer from RMA Fund	40,243.68	
Less: Transfer from USDA Cooperative Agreement	1,692.95	
Refund from General Fund		64,000.00
TOTAL	$1,531,116.61	$1,258,038.14
Treasurer's Cash as of June 30	$ 212,772.01	$ 42,510.63
Investment in Bonds and Premium on Bonds	103,874.98	618,843.75
Total Credit Balance as of June 30th	$ 316,646.99	$ 661,354.38

DEPARTMENT OF AGRICULTURE

Code 1101

STATEMENT OF RECEIPTS

July 1, 1948—June 30, 1950

	1949-50	1948-49
Fertilizer Tax	$ 384,287.37	$ 431,205.77
Cottonseed Meal	667.47	17,970.60
Feed	183,719.22	186,945.56
Seed Licenses	27,678.10	27,498.00
Condimental Feed	2,440.00	2,440.00
Serum	7,507.11	6,911.10
Costs	20,318.61	20,837.63
Linseed Oil	1,656.67	1,444.44
Bleached Flour	8,565.00	9,800.00
Bottling Plants	1,740.00	1,730.00
Ice Cream	3,080.00	2,490.00
Insecticides	18,640.00	17,970.00
Test Farms	100,837.14	109,726.53
Bakeries	2,770.00	2,710.00
Chicken Tests	25,013.08	16,768.32
Seed Tags	21,099.01	19,784.39
Inspection Entomology	4,884.15	2,653.62
Oleomargarine	1,325.00	3,375.00
Rabies	147.00	414.00
Land Plaster and Agriculture Lime	14,374.49	20,532.99
Fertilizer Registrations	4,334.00	3,493.00
Miscellaneous	146.46	4,792.71
Feed Registrations	4,771.00	4,357.95
Canned Dog Food Registration	557.00	494.00
Lime Registration	265.00	175.00
Land Plaster Registrations	35.00	25.00
Livestock Marketing Permits	4,100.00	2,625.00
Low Grade Fertilizer Tags		
Dog Food Stamps	4,667.49	3,365.59
Hatchery Fees and Supplies	10,187.22	7,857.69
Sale of Cook Books	2,671.40	1,115.56
Credit Union Fees	8,454.11	10,172.56
Weights and Measures Fees	19,162.50	14,028.50
General Funds Contribution	284,531.00	
Sale of Lumber and Pulpwood Willard, N. C.	354.17	6,613.93
Cooperative Plant Industry	403.02	2,396.97
Permits for Out-of-State Milk	1,650.00	400.00
Sale of Automotive Equipment		2,990.99
"Insects of North Carolina"		5.00
U. S. D. A. Developing Market Service	724.53	11,040.32
Anti-Freeze Permits	2,100.00	
Sale of Farm Equipment	54.89	
Interest on Investments	6,491.01	15,000.00
TOTAL	$1,186,409.22	$ 994,157.72

SHEEP DISTRIBUTION PROJECT

Special Fund—Code 3

STATEMENT OF DISBURSEMENTS

July 1, 1948-June 30, 1950

	1949-50	1948-49
Sheep Ewes Purchase	$ 40,443.67	$ 4,115.00
Purchase of Purebred Cattle in Cooperation with State College		12,000.00
Purchase of Cattle	109,506.72	14,882.00
Jersey Cattle Club	1,500.00	
Purchase of Lambs	2,966.71	
Purchase of Rams	3,190.00	300.00
Freight and Trucking	2,491.33	88.71
Feed and Pasturage	228.11	
General Expense	522.37	42.43
Handling and Storage of Food Products	37.50	4.41
Display for N. C. State Fair		325.00
Freight Charges—Potatoes Distributed to Schools and Institutions	6,490.28	
Purchase of Equipment	2,834.65	
TOTAL	$ 170,211.34	$ 31,757.55

SHEEP DISTRIBUTION PROJECT

STATEMENT OF RECEIPTS

July 1, 1948-June 30, 1950

	1949-50	1948-49
Sale of Ewes	$ 45,268.40	$ 3,466.00
Sale of Cattle	112,132.33	14,977.22
Sale of Lambs	3,523.72	
Reimbursement for Purchase of Purebred Cattle		12,000.00
Jersey Cattle Club	1,500.00	
Sale of Rams	2,517.80	60.00
Miscellaneous Collections	904.27	58.05
Handling and Storage of Food Products	40.10	187.90
State Fair Dairy Project		325.00
Freight Charges—Potatoes Distributed to Schools and Institutions	16,035.50	
TOTAL	$ 181,922.12	$ 31,074.17

Balance July 1, 1949 ..... $21,078.09

Balance July 1, 1950 ..... $32,788.87

STATE WAREHOUSE SYSTEM

Special Fund—Code 1801

FINANCIAL STATEMENT

STATEMENT OF DISBURSEMENTS

July 1, 1948-June 30, 1950

	1949-50	1948-49
Salary-Superintendent	$ 6,000.00	$ 5,749.94
Salaries and Wages, Staff	17,266.23	17,276.59
Supplies and Materials	86.98	118.08
Postage, Telephone, Telegraph and Express	1,000.00	794.70
Travel Expense	1,396.64	1,312.12
Printing and Binding	7,270.72	6,798.83
Repairs and Alterations	14.25	15.35
General Expense	133.19	49.00
Insurance and Bonding	246.75	243.75
Equipment	51.01	121.13
Cont'b. Retirement System	1,018.73	986.82
TOTAL	$ 34,484.50	$ 33,466.31

STATE WAREHOUSE SYSTEM

STATEMENT OF RECEIPTS

July 1, 1948-June 30, 1950

	1949-50	1948-49
Interest on Bonds	$ 13,750.00	$ 13,750.00
Interest on Loans	4,755.13	5,897.29
Leases	280.00	252.00
Sale of Warehouse Supplies	10,114.40	6,724.81
Sale of Loose Cotton	178.94	
Miscellaneous	143.00	31.00
TOTAL	$ 29,221.47	$ 26,655.10
Treasurer's Cash, Supervision Account	$ 43,208.69	$ 56,410.53
Treasurer's Cash, Principal Fund	$ 49,326.07	$ 57,806.07

Total Investments and Loans at June 30, 1950 ..... $ 684,630.00

COOPERATIVE INSPECTION SERVICE

Special Fund—Code 1803

STATEMENT OF DISBURSEMENTS

July 1, 1948-June 30, 1950

	1949-50	1948-49
Salaries, U. S. Inspectors and Supervisors	$ 145,607.71	$ 97,538.50
Supplies and Materials	737.66	389.98
Postage, Tel., Tel., Express	2,402.49	2,391.85
Travel Expense	19,951.16	38,044.96
Printing and Binding	974.57	63.50
Typing	192.20	881.35
Office Rent	349.92	264.13
General Expense	148.70	60.05
USDA Certificates	3,453.18	3,109.90
Equipment	457.78	762.96
Cont'b. Retirement System	164.76	157.88
TOTAL	$ 174,440.13	$ 143,665.06

COOPERATIVE INSPECTION SERVICE

STATEMENT OF RECEIPTS

July 1, 1948-June 30, 1950

	1949-50	1948-49
Strawberries	$ 1,391.86	$ 2,933.62
Potatoes, Cucumbers, Beans	24,600.01	83,032.55
Mixed Vegetables	21,326.20	19,309.04
Field Peas		16.12
Tomatoes		58.26
Cabbage	3,318.29	4,066.15
Corn	1,332.67	226.80
Cantaloupes	391.76	363.09
Peaches	2,095.63	2,667.78
Watermelons	275.83	838.35
Apples	236.53	647.30
Sweet Potatoes	7,815.38	5,689.48
State Inspections-Various Miscellaneous	715.11	600.03
Soybeans	102.00	17.40
Interest on Bonds	1,225.00	1,225.00
Egg Inspections	2,530.56	13,017.87
Peanut Inspections	103,587.96	14,301.70
Wheat Inspections	30.00	
Inspections, Charlotte, N. C.	5,254.47	1,300.49
TOTAL	$ 176,229.26	$ 150,311.03

Cash Balance July 1, 1949 ..... $16,806.40

Cash Balance July 1, 1950 ..... $18,595.53

Investment in Highway and U. S. Treasury Bonds June 30, 1950 $45,000.00

RESEARCH AND MARKETING ACT, FEDERAL FUND

Special Fund—Code 51

STATEMENT OF DISBURSEMENTS

July 1, 1948-June 30, 1950

	1949-50
Markets Division expenses in connection with RMA project—Transferred to Code 1101	$ 27,252.77
Crop Statistics Division expenses in connection with RMA project—Transferred to Code 1101	12,990.91
TOTAL	$ 40,243.68

RESEARCH AND MARKETING ACT, FEDERAL FUND

STATEMENT OF RECEIPTS

July 1, 1948-June 30, 1950

	1949-50
Transfer of unspent balance at June 30, 1949, from RMA funds set up in Code 1101	$ 20,459.68
RMA Matching Funds—1949-50	30,040.32
TOTAL	$ 50,500.00

Balance July 1, 1950 ..... $10,256.32

GASOLINE AND OIL INSPECTION

General Fund—Code 320

STATEMENT OF DISBURSEMENTS

July 1, 1948-June 30, 1950

	1949-50	1948-49
Salary—Chief Chemist		$ 5,520.00
Salaries and Wages—Staff	151,797.78	115,469.24
Supplies and Materials	3,846.52	2,585.44
Postage, Telephone, Telegraph, Express	6,367.89	4,587.12
Travel Expense	44,537.89	35,646.04
Printing and Binding	1,661.11	663.46
Repairs and Alterations	361.07	1,196.42
General Expense	2,045.79	1,068.25
Insurance and Bonding		29.38
Light and Power	1,974.32	1,880.10
Motor Vehicles Operation	2,326.55	951.92
Equipment	31,216.32	4,102.76
TOTAL	$ 246,135.24	$ 173,700.13

CONTRIBUTION FROM GENERAL FUND

General Fund—Code 3212

STATEMENT OF DISBURSEMENTS

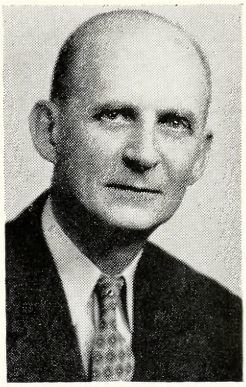
July 1, 1948-June 30, 1950

	1940-50
Contribution to Department of Agriculture Code 1101	$ 284,531.00

DIVISION OF CHEMISTRY

E. W. CONSTABLE

Chief Chemist



E. W. CONSTABLE

The age-old practice of judging quality by "the feel of the cloth" is ever sound in principle. Its present-day application, however, requires greatly expanded facilities—expanded in fact to the same extent as has become the practice of having others make for us the things we want instead of making them ourselves. This requirement finds expression in control laws and and in the chemical and physical analyses which are prescribed under them.

For example, the quality or honesty in the labeling of fertilizers, fertilizer materials, commercial feeds, insecticides, fungicides, liming materials and landplaster cannot be judged by look, odor or feel. Similarly, the purity of linseed oils or the safety of an antifreeze preparation cannot be so judged. Adulteration and misbranding in foods, drugs, cosmetics and devices seldom can be judged by the human senses.

The function of the Chemistry Division is to collect samples of these products from all parts of the State and to check them by chemical analysis to see whether they meet legal requirements. The meaning of this work to consumers and to producers is readily apparent.

FERTILIZERS, FERTILIZER AND LIMING MATERIALS

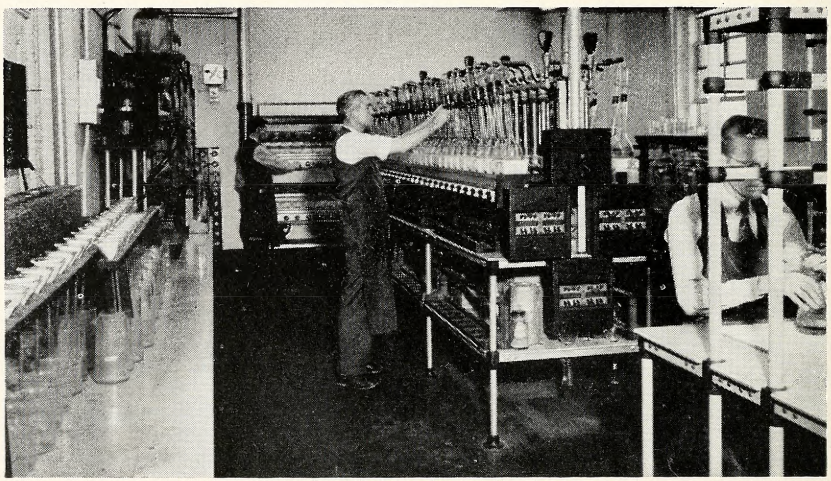
All mixed commercial fertilizers offered for sale in the State are subject to analyses for four to ten items according to purpose and guarantee, namely—nitrogen, phosphate, potash, acid forming or acid neutralizing qualities, calcium, magnesium, chlorine, sulfur, boron and manganese. Limes are checked for calcium, magnesium and acid neutralizing value; landplaster for calcium sulphate. Following is a summary of samples analyzed during the 1948-50 biennium, together with comparative data for 1946-48:

	1948-50	*1946-48*
Official fertilizer samples	18,557	16,049
Unofficial fertilizer and fertilizer materials for farmers	120	116
Official liming material, liming material with potash and landplaster	235	377
Insecticides and fungicides	200	153
TOTALS	19,112	16,695

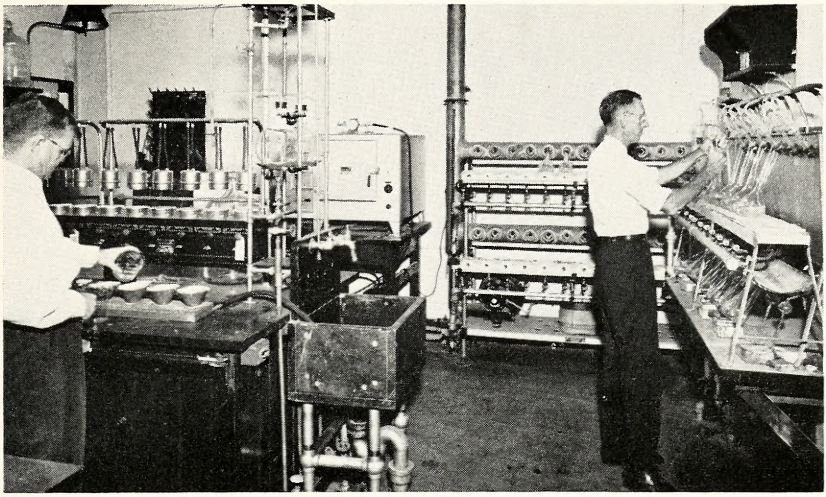
Official fertilizer samples show an increase of 2,508 in 1948-50 compared with the preceding biennium. The present coverage is a full load for the personnel and laboratories now provided. The magnitude of the chemical work involved may be visualized by the fact that approximately 150,000 chemical determinations are required to clear the number of samples analyzed.

The results of analyses in general indicate that the fertilizers sold in the State during the biennium were of good quality and satisfactorily measured up to guarantees. The limited number of failures to maintain this level appeared to be largely such deviations as show up at times in the practical production of commercial fertilizers. Reimbursement for deficiencies was made to consumers through the penalty provision of the law.

Upon completion of analyses, individual reports were sent to those immediately concerned. All results were made available to the public collectively in THE BULLETIN of the Department.



Analyzing fertilizer for nitrogen content.



Chemists at work in feed laboratory.

COMMERCIAL FEEDS

Commercial livestock feeds are analyzed for content of protein, fat, crude fiber and, at times, urea; also microscopically for materials composing the feeds. Coverage for 1948-50, as compared with 1946-48, is given in the following tabulation:

	1948-50	*1946-48*
Official feed samples	4,432	4,410
Unofficial and miscellaneous samples	507	540
TOTALS	4,939	4,950

In a certain number of instances feeds fail to measure up to guarantees. Reimbursement to consumers for deficiencies is made through the penalty feature of the feed law. It may be stated, however, that feeds were maintained on a generally satisfactory level during the past biennium.

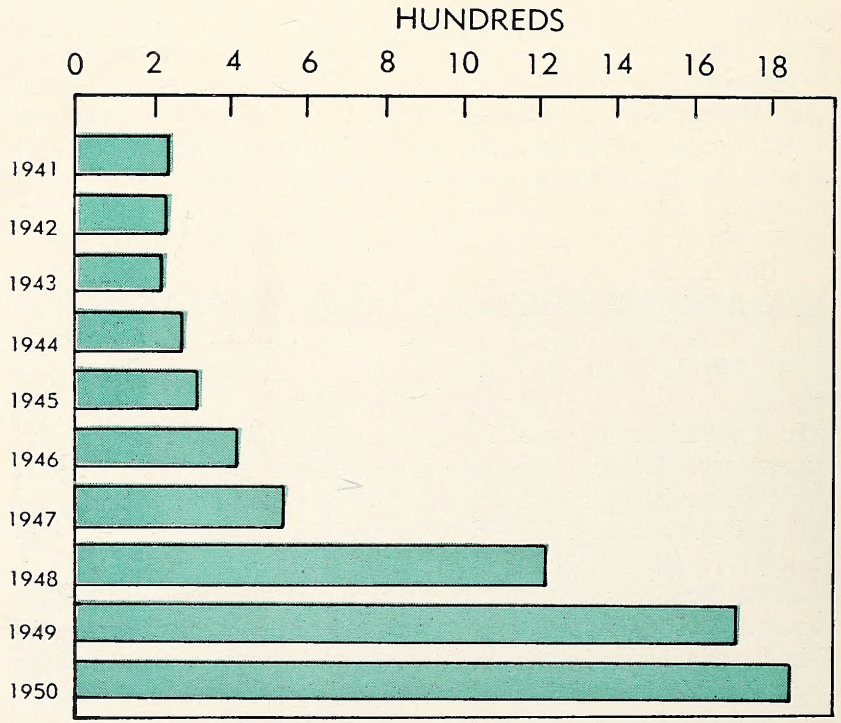
As in the case of fertilizers, reports were forwarded to those concerned. Information on feeds found to be deficient was published periodically in the AGRICULTURAL REVIEW and all results were published annually in THE BULLETIN.

ECONOMIC POISONS

There continues to be rapid and expansive change in the field of economic poisons. To the older types of insecticides and fungicides many complex and even more dangerous products have been added.

The problem of chemical analysis is greatly complicated by the complexity of these new products. The time and equipment required for the older ones was relatively simple as compared to the requirements for the new, particularly with various mixtures of DDT, benzene hexachloride, rotenone, pyrethrins, toxaphene, chlordane and others.

The work load is further increased by the large number of insecticides that have been brought under the law and are now registered for sale in this State. Registrations have moved from 232 in 1941 to 1,864 in 1950, an increase above sevenfold. The accompanying chart gives a graphic comparison.



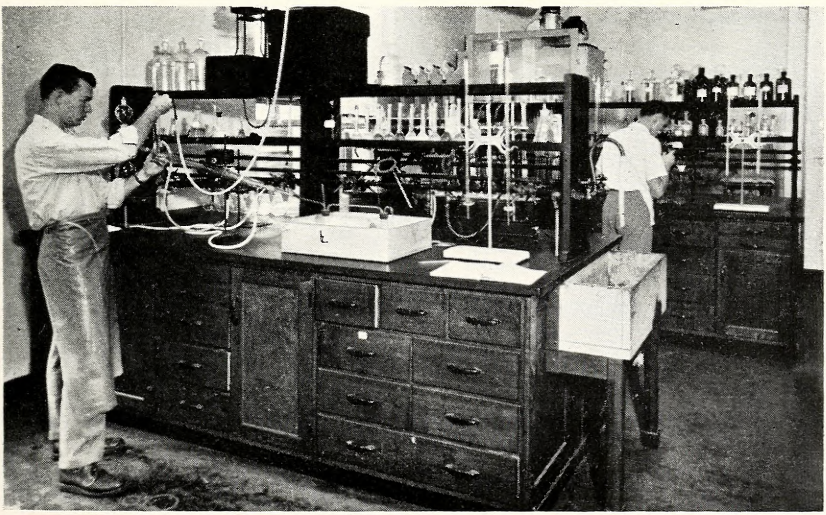
Insecticide registrations are increasing rapidly.

The expansion, which has occurred largely since 1947, was due to the increased number of insect pests and plant diseases, the demand for poisons to control them, the development of many new products and the change in the law, effective in 1948, to cover all insecticides. Only agricultural insecticides had been covered previously. The change was necessary because the line of division between various classes of insecticides had disappeared, also because all users needed protection.

It is not uncommon now that the cost of insecticides equals, or even exceeds, a farmer's fertilizer costs. Present-day agriculture could not exist without today's insecticides. The magnitude and importance of the control job is obvious.

To date the personnel provided for this work is one chemist, annual salary $2,880. The income from the registration of insecticides for the year 1950 was $18,640. Obviously the present provision for this work is entirely inadequate to do an acceptable job and to afford the protection necessary both for users and the producers of insecticides.

Request is being made in the 1951-53 budget for more adequate provision, namely, four chemists, one inspector, one stenoclerk, and one laboratory aid and sufficient additional funds to equip a second laboratory and to cover operating costs.



Insecticide laboratory; another is needed.

LINSEED OILS

Results of the analysis of about 700 samples of linseed oil, both the pure and the replacement varieties, indicate these products in general to be on a satisfactory level both as to quality and labeling.

ANTIFREEZES

For an extended period of years there appeared on the market large quantities of cheap, permanent type automobile antifreezes. These were made up mainly of chemical salts such as calcium chloride and were highly damaging to the engines and cooling systems of motor vehicles.

Such damage was widespread and ran into enormous costs. Because of grievous experience, motorists learned not to purchase cheap types of permanent antifreezes. The producers of these harmful and highly profitable products, however, quickly overcame this price barometer and its sales handicap by raising prices to the level of the satisfactory glycol types. Purchasers no longer had an index to difference until it showed up in the form of damage or ruin to engines and cooling systems.

A law of 1943 prohibited the sale of automotive antifreezes containing chemical salts of the type referred to. It was ineffective. Damage to automotive equipment, particularly in periods of scarcity of glycols, continued unabated. The guilty persons, itinerant salesmen or out-of-state manufacturers, could not be apprehended.

A new and improved antifreeze law was passed in 1949. It required that antifreezes be registered with the Department of Agriculture and that permits be issued before sale was legal. Registration required full information to qualify the products. Also, as in the case of fertilizer and other products, they were subject to chemical analysis.

An estimated 90 brands of antifreeze were on the market prior to 1949. At least 18 of these, some of them sold in large quantity, were known to be harmful. Locating them and stopping sale before damage occurred, however, was a different proposition. For the first year (1949) under the new law, 76 brands were offered for registration. All proved acceptable. None of the type banned by the law was offered for registration. The same pattern holds for 1950.

Prior to 1949 complaints of damage were numerous and many samples of products which had caused damage were submitted for chemical analyses. Since the new law came into force not one complaint of damage has reached the Division. Cooperation between sound producers, dealers and the Department appears to have completely driven harmful antifreezes from the market.

FOODS AND DRUGS

The food control work is carried out under the State's basic pure food law—The North Carolina Food, Drug and Cosmetic Act. This is supplemented by specifically detailed laws dealing with bakeries, bottling plants, flour and its products, cornmeal and oleomargarine. The overall purpose is to assure the public of being provided with clean, wholesome, safe foods, drugs and cosmetics.

In general, those who process, handle and sell food products appear to have a high sense of responsibility and are cooperative in the administration of the food laws. The difficulties which arise usually stem from a minority and are largely attributable to carelessness, indifference and ignorance of both the ethics and the responsibilities of the industry.

Section of Food Laboratories.

INSPECTIONS—PLANTS AND SALES OUTLETS

One very effective means of averting trouble is to block it at the source. The inspection and proper maintenance of food processing plants, therefore, is of prime importance. A well-planned and properly operated plant will be relatively free of trouble. If poorly planned and carelessly operated, however, trouble is virtually certain. Much food can be processed through a dirty plant and yet come out apparently satisfactory. Under such conditions, however, the periodic accident which results in contaminated or harmful food is inevitable. It is characteristic of uninspected plants generally to become careless. Prompt correction of minor defects is required. Major ones may call for suspension of plant activities pending reconditioning or further legal action if necessary.

SUMMARY—FOOD PROCESSING PLANT INSPECTION

	1948-50	*1946-48*
Bakeries and Doughnut Plants	2458	2076
Bottling Plants	1596	1588
Miscellaneous plants (processing and packaging, meats, pickles, fish, flour, candy, potato chips, etc.)	2311	1562
Totals	6365	5226

PLANT OPERATIONS SUSPENDED

	1948-50	*1946-48*
Bakeries	18	38
Bottling Plants	None	14
Miscellaneous	None	None
Totals	18	52

Further systematic inspection is made of conditions and labeling of products in wholesale and retail outlets. Many obvious defects can be detected and corrections advised. Apparent fraud or major defect may result in placing an embargo on foods pending further action or for court procedure where indicated. Out of approximately 8,000 such inspections, 769 instances of defective labeling were found and corrections required.

ADULTERATION AND MISBRANDING OF FOODS

A food failing to meet the requirements of the law will classify either as adulterated, misbranded or both. Adulteration covers spoilage, decomposition, the presence of poisonous or deleterious substances, filth, vermin, foreign objects or materials, substitutions, abstractions, failures to meet standards or definitions and exposure to insanitation.

Basically, proper labeling requires that consumers be given full and significant facts regarding a product and that this not be false or misleading in any particular. Required in all instances is the name of the product, the name and address of the manufacturer or person responsible for it, the net contents and, where not qualified by an official standard, a list of ingredients. Drugs require additional information for safety and proper use.

Under adulterations there were 224 actions involving 13,203,790 pounds of foods and under misbranding 37, involving 19,495 pounds; total 261 actions, 13,223,285 pounds. A more detailed breakdown is given in a later tabulation.

There is a large economic loss as well as threat to human welfare involved in foods which are rendered unfit for human consumption by spoilage, insanitation, and filth arising from various sources, including insect and rodent infestation. Among the foods most susceptible to this type of damage are the cereal products—flour, cornmeal, breakfast foods etc.—meats, both fresh and cured; bakery products, dried fruits etc. Because of such damage there were 105 actions involving approximately 167,700 pounds of cereal products and 72 actions involving 234,000 pounds of other foods.

In many instances the Department is voluntarily called on for help in clearing such situations. In all instances the policy is to divert questionable foods into channels other than for human consumption.

ECONOMIC CHEATS

Deliberate attempts at economic cheats usually follow along the line of abstracting or omitting valuable ingredients, making cheap or worthless additions or substitutions, the use of inferior or damaged ingredients, or the use of preservatives (at times toxic) as a substitute for the proper selection of raw materials and processing. Some additions may be relatively harmless except for lack of nutritional values such as corn cobs in meal or

saccharine in place of sugar. Others may be directly harmful as mineral oil or poisonous preservatives. Among the cases dealt with were the use of mineral oil in peanut butter, saccharine instead of sugar in soft drinks, and misuse of preservatives.

The more prominent misuse of preservatives was sulfites and benzoates on and in fresh meats, particularly when ground. Sulfites deodorize tainted meat and, when used on scraps ground into hamburger, produce a bright red color simulating freshness. Benzoates probably are intended for the same purpose but are not so effective. Attempts at using poisonous preservatives apparently have waned for the time being.

One product sold for treating all fresh meats and for putting into ground meats was composed of salt, sugar, baking soda and benzoates. Directions advised application in water solution. Interestingly, the formula for ground meat was a given quantity of powder dissolved in five pounds of water, to be added in 50 pounds of meat—obviously a 10% adulteration with water. Use of such products was stopped.

OFFICIAL SAMPLES

A key factor in the enforcement of the food and drug laws is the collection and analysis of official samples. In a great majority of instances chemical analyses are the determining factor. These, however, are tedious and time-consuming. It is important that samples be judiciously selected in order that this work may be of the greatest effectiveness and to avoid overloading of laboratories.

During the biennium, Department Inspectors collected 1,410 official samples of all types. These were subjected to appropriate analyses—chemical, physical, microscopical and optical.

A large number of unofficial samples are also received for analysis, from various parts of the State, representing all types of interest. Effort is made to analyze as many of these as are justifiable and as time will permit.

PRODUCTS WITHDRAWN FROM SALE

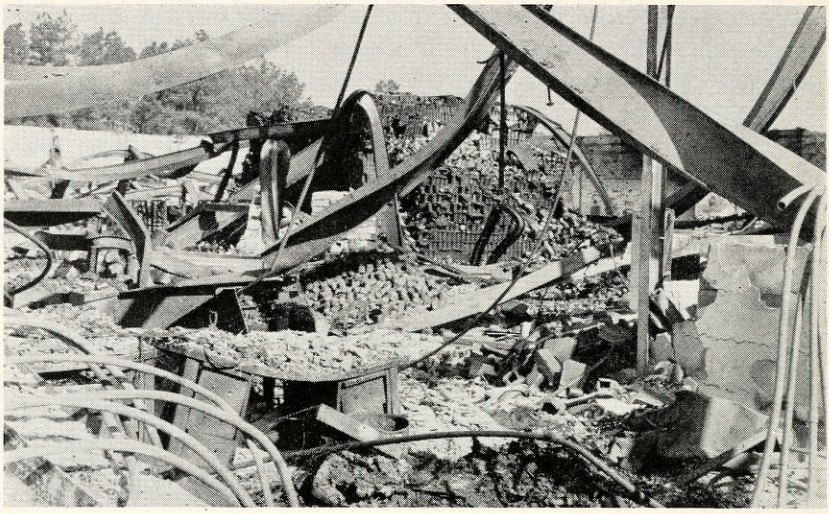
The section of the law setting up procedure for promptly withdrawing from sale products which may endanger the public is a very effective means of protection. When the Department finds, or has probable cause to believe, that products under its jurisdiction are adulterated or are so misbranded as to be

dangerous or fraudulent within the meaning of the law, it is mandatory that they be placed under embargo and held until question of danger or fraud is cleared, or pending disposal through further process of the law.

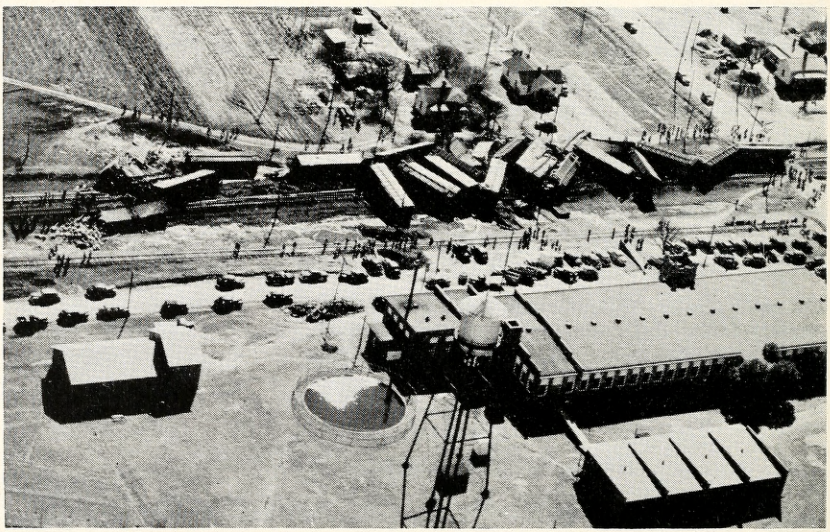
Activities in this field are summarized in the following tabulation of embargo actions:

SUMMARY OF PRODUCTS EMBARGOED

	1948-50	
	Actions	Quantity
Flour, cornmeal, cereals, cornstarch, cake mixes, stabilizers, cocoa, chocolate, glazed fruits, etc.: Insects, worms, stale, exposed to dirt and rodents, foreign substances	105	167,734 lbs.
Meats, poultry, fish, fish roe, butter, egg substitutes, shortening: Spoilage, unsanitary conditions, molded, misbranded, rancid	21	36,512 lbs.
Bakery Products (raw and finished) cakes, pies, doughnuts, sandwiches, bread, buns, and pastries: Stale, short weight, mislabeled, exposed to dust, etc.	23	2,297 lbs.
Raisins, dried fruits, candy, cocoanut, figs, dates, milk powder and milk solids: Insects, worms, weevils, misbranded, spoiled, stale	35	11,671 lbs.
Beverages (soft drinks), fruit drink, chocolate beverages, orange soda, etc.: Misbranded, bottled under unsanitary conditions, saccharine used	21	64,508 bottles
Pickles, relish, sauerkraut, peanut butter, nuts. Rusty containers, spoilage, exposure to filth, cans damaged, etc.	16	185,721 lbs.
Sugar, spices, condiments, salt, beverage syrup: Insects, exposed to dirt and dust, stale, rat-gnawed bags, moldy	19	60,362 lbs.
Bottle Crowns: Molded, rusty, damaged by dampness	2	36,000 crowns
Canned goods. Fruits, vegetables (large assortment), chili concarne, beans: Short weight, spoilage, cans buckled, rusty, weevils	7	9,663 lbs.
Fire damaged stock: Large stocks of flour, meal, assorted canned goods, baby foods, molasses. Damaged by fire and water	10	11,604,457 lbs.
Train Wrecks: Damage to freight carloads of fruit and vegetables.....	1	1,111,000 lbs.
Drugs: Shortweight	1	7 bottles
TOTAL	261	13,223,285 lbs.



Foods exposed to fires, floods, wrecks and storms must be inspected to safeguard the public. When fire destroyed a large food storage warehouse at Durham in 1948 it involved a loss of 4,813 tons of foodstuffs valued at $1,750,000; but about 461 tons of food was salvageable.



This train wreck at Vass, N. C., in 1949, involving 26 cars of fruits, vegetables and canned goods, meant a big inspection job for our food inspectors.

FIRES, FLOODS, WRECKS AND STORMS

The Division gives immediate attention to catastrophes, such as fires, floods, and storms. Should occasion require it, more than one inspector or other personnel are shifted to emergency areas. Stocks of foods which are exposed in a manner that may constitute danger are placed under embargo, then cleared by salvaging or other disposal as rapidly as possible. Where circumstances so indicate, specimens are forwarded to the laboratory for additional checking.

As usually happens, there were a number of fires during the biennium involving food and drug stocks. One of the more serious of these occurred during late 1948 in Durham, destroying a large, central storage and distribution warehouse. Food stocks of all types—flour, meats, fruits, produce, canned goods etc. to the extent of 5,229 tons—were involved. Of this stock, 4,813 tons, valued at $1,750,000, were a total loss. Salvageable material amounted to around 461 tons. Overall loss—foods, building, refrigerating machinery etc.—was $3,000,000.

Following the regular policy of the Department, this work was handled in close cooperation with all concerned. In this instance, the cooperative effort of officials of the Durham Health, Police, Fire and Sanitary Departments, and of representatives of the owners and insurance companies was highly constructive and gratifying.

In approximate figures, other fire stocks handled during the biennium involved quantities of products totaling 128,600 pounds of which approximately 75% was a total loss. Locations and quantities involved were Louisburg, 80,000 pounds; Raleigh, 24,000 pounds; Charlotte, 10,300 pounds; Jacksonville, 8,000 pounds; Robbinsville, 6,300 pounds.

There was one railroad wreck of serious consequence during the period, involving 26 cars (555 tons) of fruits, vegetables and canned goods. Of this, 187 tons were a total loss and 368 tons were salvaged.

In some years, additional losses are suffered because of tropical storms, floods, failure of refrigeration machinery etc. The State had the good fortune to miss these latter named types of losses during the past two years.

DRUGS

The drug control work in the past had been rather heavily handicapped for several reasons. No provision was made for personnel and other costs necessary to carry on a proper drug control program. No laboratory space in the present Agriculture Building was available for the work. One highly important activity in drug control was seriously handicapped because of a flaw in the drug laws. This picture, however, was changed by the 1949 session of the Legislature. Funds for personnel, operation and a drug laboratory were provided. The drug law was amended to afford positive control in the case of drugs which were too dangerous for self-medication and therefore should be limited to sale on prescription.

The drug laboratory has not yet been set up due to lack of space in the present Agriculture Building. It is planned as a part of the new annex when that is constructed. This construction, it is hoped, will be completed during the coming year, after which time the way will be open for the drug control program to move along on a normal basis as planned.

Under present conditions, however, the Division has been in a position to carry on constructive drug work in a limited way. There had been a number of complaints regarding the illegal sale of barbiturates (sleeping powders and pills) in the State. These came from seven towns and cities. In each instance, they were followed up and fully investigated. In all cases it appeared that the investigation and accompanying warning was sufficient to stop both the practice and the complaints. The aid of the State Bureau of Investigation in procuring evidence was very helpful and is appreciated.

Regrettably, each year a number of drugs get on the market which, for one reason or another, are not what they should be. They therefore constitute a grave danger. Such instances in the past have resulted in severe illness and at times deaths. There were five such cases during the biennium. Fortunately none of these was accompanied by such tragic results as was the case of some previous instances. They were a hazard, however, and required immediate attention to assure their prompt removal from sale.

There was one development of rather insiduous nature, involving the sale of lithium chloride, advocated for use by those under the necessity of eating salt-free diets. To some extent lithium

chloride satisfied the appetite for salt. It was considered harmless. This, however, is not true. When used in the quantities recommended it is toxic. Its use is insiduous in that it largely produces the same symptoms that are characteristic of high blood pressure. It therefore can be grossly misleading. As soon as the facts came to light the Division joined in a State-wide campaign to remove lithium chloride from sale and to get out general warnings about its dangers.

The work being carried on in connection with drugs is not considered by any means adequate to satisfy needs. With the setting up of space to work in, equipment to work with and personnel to utilize these, the Division will be able to carry on a reasonably adequate drug control program.

OLEOMARGARINE

Amendment of the oleomargarine law, apparently a biennial feature, reduced the manufacturers' and wholesalers' annual tax from $75 to $25 and made permissible sale of the colored product in public dining rooms, provided that a suitable placard stating the fact is displayed and that each serving, or the dish in which served, bears prescribed markings. Misunderstandings regarding the law were cleared up. No purposefully illegal practice has yet come to light.

COOPERATION WITH OTHER AGENCIES

It has been a continued policy of the Department to cooperate fully with all other agencies in the same or kindred lines of work. These include the State Board of Health, City and County Health and Sanitary Departments, the N. C. Board of Pharmacy, the N. C. Pharmaceutical Association, Federal and other state control divisions and various State and national organizations such as those of bottlers, bakers and millers. A number of joint operations have been carried on with city and county health and sanitary departments in the State.

Cooperation with the Federal Food and Drug Administration and with similar control agencies of other states has been very useful to the Division. It is particularly so in eliminating many of the troubles which in the past arose because of questionable operators outside of the state carrying on what might be termed "sneak" business across the State line.

LABORATORIES AND EQUIPMENT

Laboratories and equipment are always subject to heavy corrosion and wear. For one period, these were in a critical state of disrepair. The practice of providing for regular repair, replacement and renovation has resulted in improved physical and environmental conditions, both an asset to the work and those carrying it on. In order that a reasonably high level of efficiency may be maintained and that the comforts and welfare of personnel be given full consideration, it is essential that attention to these matters be made a regular feature of laboratory maintenance and operation.

PERSONNEL

Difficulty in maintaining satisfactorily qualified personnel eased to some extent during the biennium, although industry and Federal agencies still exercised first choice. As is to be expected, the present emergency tends to reverse the process. National interest and safety obviously come first. Second to this interest, it is hoped that state salaries can be maintained on a level to afford personnel adequately qualified to accomplish best results.

In general the character and efficiency of the personnel and its work has been on a high level. Both merit commendation and appreciation.

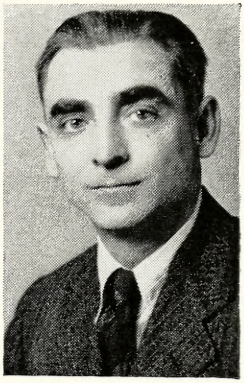
SUMMARY

In summary for the 1948-50 biennium, control work has proceeded with reasonable satisfaction in some fields; in others it has not. One of the most critical needs is more adequate provision for the control of insecticides and other economic poisons.

Effective work has been done in drugs, but coverage falls far short of needs. It is expected that this will be extensively corrected as soon as construction already provided for affords laboratory space. Food work has followed a normal pattern, though somewhat restricted because of necessity for borrowing personnel to help carry the insecticide and fertilizer programs. Results on antifreezes have been phenomenally good for a first year's application of a new law. It is hoped that adequate means and provisions will be available to bring all fields of control up to a satisfactory level for 1951-53.

CREDIT UNION DIVISION

D. R. GRAHAM
Superintendent



D. R. GRAHAM

The biennium ending June 30, 1950, was one of the most successful in North Carolina Credit Union history. Beginning with the enactment of our law in 1915, credit unions grew very slowly until 1940. At June 30, 1940, total resources amounted to slightly more than $1,500,000. Beginning in 1941, resources began to increase sharply. The increase during the past two years was considerably greater than the total resources ten years ago, and our credit unions now are worth over $9,300,000. This represents the savings of over 49,000 members in 208 credit unions. Of this amount $5,800,000 is invested in loans to members and $1,700,000 represents investments in government bonds. The remainder represents cash on hand and in banks, building and loan shares, investments in other credit unions etc.

During the biennium, sixteen credit unions were organized and eight liquidated; making a net gain of eight credit unions for the period. The principal reasons for liquidation were lack of interest on the part of the membership and inability of the officers to keep proper records.

Loans may be made to members for any useful purpose and at present over 21,000 members are using this means for the purpose of paying accumulated bills, buying automobiles, farm machinery and equipment, farms, homes and many other things. It is impossible to estimate the saving effected by borrowing from credit unions, but a study of Dr. William Hays Simpson's "Small Loans in the Carolinas" shows that people in the low income brackets without bank credit are paying from 42 to several thousand per cent. Although these figures sound unbelievable, a study of Dr. Simpson's book will convince the most skeptical.

Our work among Negro rural groups continues to bear fruit and hundreds of Negroes throughout the State who might otherwise never have owned property now own their own homes and farms and are financing farm operations through credit union loans.

Howard D. Leatherwood, a member of the Champion Credit Union in Haywood County, is shown with a farm tractor he financed through a credit union loan. Hundreds of credit union members throughout the State have improved their farms and homes and eliminated a lot of the drudgery of farm work through similar loans.

The accompanying tables show credit union growth since the law was enacted and the condition of credit unions at June 30, 1950.

GROWTH OF CREDIT UNIONS IN NORTH CAROLINA
1915 - 1950

Year	*No Credit Unions*	*Members*	*Total Resources*
1918	18	631	$ 24,565.79
1920	33	1,387	102,103.12
1922	33	1,387	102,103.13
1924	34	1,500	104,000.00
1926	36	1,800	106,589.11
1928	59	2,500	150,000.00
1930	60	3,300	250,000.00
1932	61	4,000	350,000.00
1934	61	4,876	376,892.00
1936	72	6,245	505,604.00
1938	78	12,343	921,548.99
1940	125	22,466	1,593,380.89
1942	150	27,094	2,105,582.29
1944	146	25,006	2,527,915.99
1946	175	35,000	6,000,000.00
1948	200	41,909	7,169,512.10
1950	208	49,031	9,322,611.23

	June 30, 1948	*June 30, 1950*
Active Credit Unions	200	208
Total Members	41,909	49,031
Total Assets	$7,169,512.10	$9,322,611.23

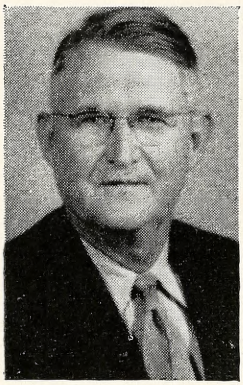
NORTH CAROLINA CREDIT UNIONS
CONSOLIDATED BALANCE SHEET
June 30, 1950

ASSETS

Cash on Hand and in Banks	$1,340,364.74
Loans to Members	5,864,501.56
U. S. Government Bonds	1,765,919.44
Other Assets	351,825.49
	$9,322,611.23

LIABILITIES AND CAPITAL

Shares	$7,022,866.83
Deposits	932,358.36
Reserve Fund	327,732.83
Notes Payable	615,124.80
Other Liabilities	191,844.53
Undivided Earnings	232,683.88
	$9,322,611.23



C. W. PEGRAM

DAIRY DIVISION

C. W. PEGRAM
Director

Distinct progress has been made by the Dairy Industry during the past biennium with increases in cow numbers, milk production and Grade A producers. The number of milk cows in North Carolina farms increased from 358,000 to 374,000 during the year ending June 30, 1950. This five percent gain was third largest in the nation, exceeded only by Texas and Alabama. During the period June, 1948, to June 30, 1950, grade A milk purchases increased from 24,222,616 pounds to 38,059,090 pounds and the number of Grade A producers rose from 2,253 to 3,713 during the same period. In 1949 milk plants purchased 340 million pounds of Grade A milk from North Carolina dairy farmers with an estimated farm value of more than 20 million dollars. The estimated value of fluid milk imported in 1949 was more than three million dollars.

Milk imports decreased from 78,799,151 pounds in 1948 to 53,007,639 in 1949. Dairy markets have been stabilized by a State-wide Milk classification order which became effective October 1, 1949. There has been continued improvement in quality of milk and other dairy products. The butterfat test program has been strengthened.

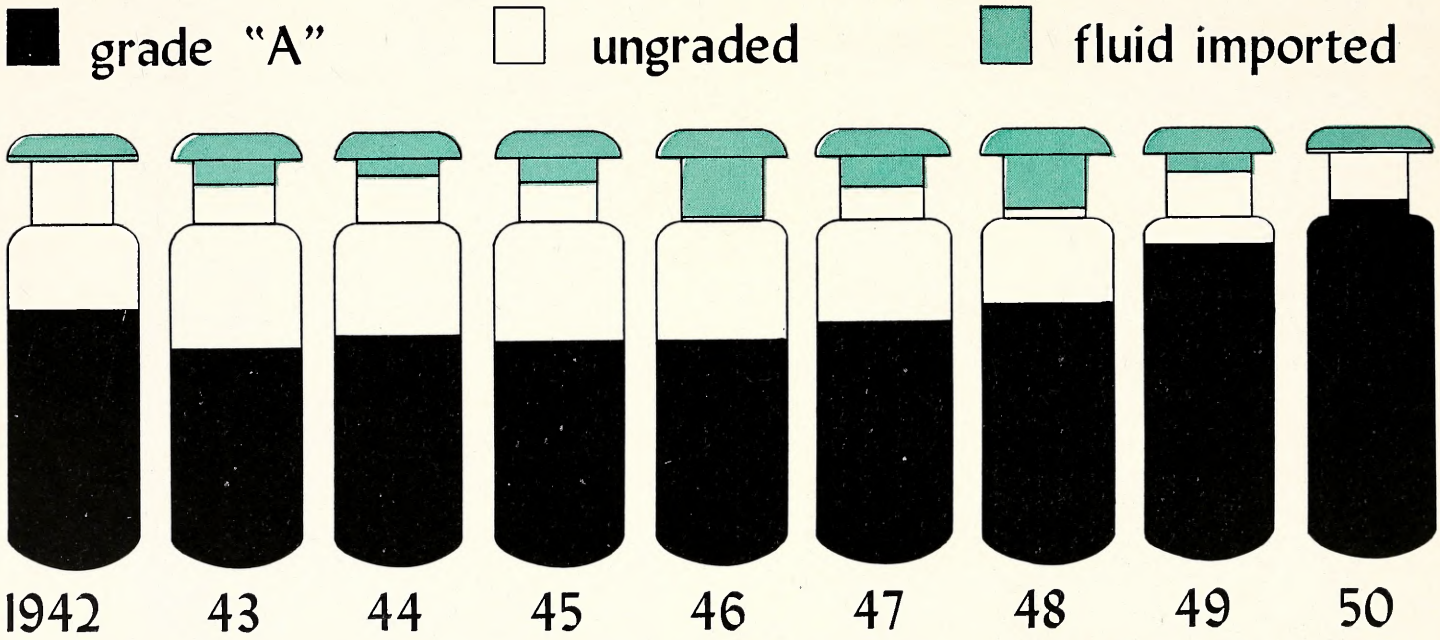
The Dairy Division has attempted to keep pace with this progress in its regulatory program. A sound dairy enforcement program is necessary for the building of a greater dairy industry in North Carolina. The Division has a great responsibility to producer, processor and consumer. Consumers generally speaking are not familiar with the time and effort devoted to their interest to ensure sanitation and purity of product.

While our job is law enforcement the philosophy is to obtain compliance by cooperation insofar as possible.

MILK AND MILK PRODUCTS

Milk is particularly subject to contamination and adulteration if proper care is not exercised in its production, processing and

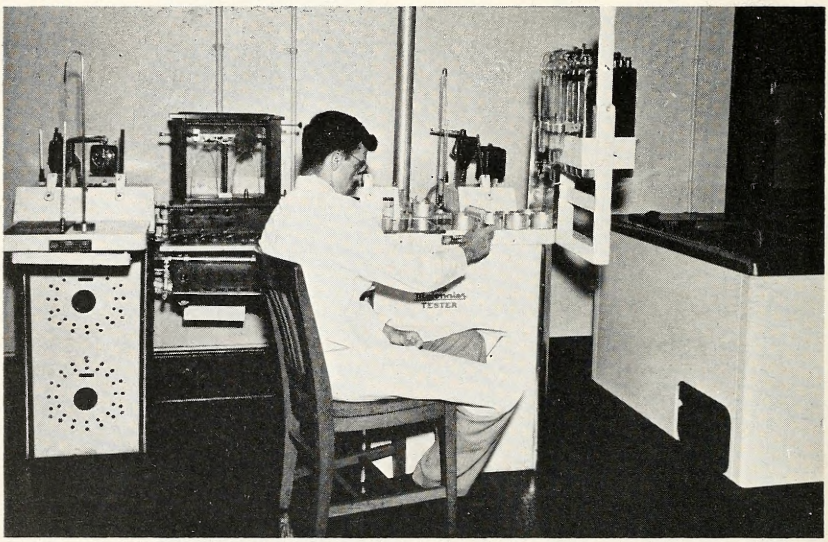
TRENDS IN NORTH CAROLINA MILK PRODUCTION AND IMPORTS



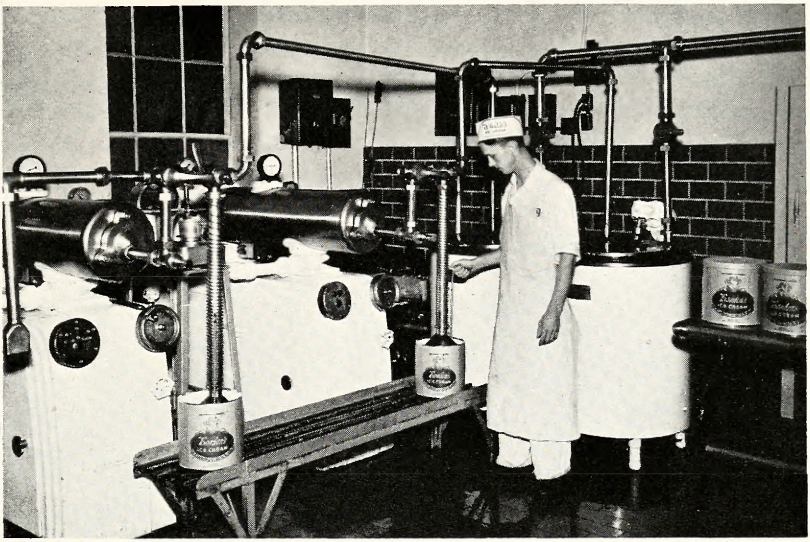
This chart reflects the sharp increase in the State's Grade A production since 1948, and the decline in milk imports.

distribution. Therefore milk sanitation and quality standards have been regulated by the State to safeguard the health of its citizens and to prevent fraudulent practices. Improvement in quality of milk and other dairy products is shown by a study of laboratory reports covering samples obtained on a state-wide basis.

Samples of milk are purchased throughout the state and are transported to the central laboratory for complete chemical and bacterial analyses. Reports of findings are supplied to processing plants and to local Health Offices. In cases where full sanitation programs are not being carried on by either county or city health units, follow-up inspections were made of plants and supplying producers. Full cooperation is offered to all Health Departments and in general excellent cooperation is received. In a number of cases the Division has joined hands with the County and City Health Department in a program whereby samples are secured jointly and analyzed in a local laboratory. We are proud of the relationship existing between all control bodies interested in milk sanitation. This joint action along with cooperation from the industry is responsible for quality improvement. A study of the laboratory analyses will show this trend toward quality.



Testing Ice Cream for Butterfat and Solids.



Scene in a modern ice cream processing plant.

ICE CREAM

Ice cream represents approximately a $25,000,000 industry in this State. North Carolina ranks about 13th among the states in regard to production, which in 1948 totaled 14,260,000 gallons, and 13,380,000 gallons in 1949. Supervision of the 73 wholesale manufacturing plants and 173 counter freezer operations requires considerable time and effort on the part of the Division. Thirty-eight new counter and soft ice cream operations were established during the last fiscal year. The results of the first six months of this year show marked improvement. Approximately 800 field inspections and over 1,000 analyses are made annually.

Since ice cream and other frozen desserts are enjoyed by all age groups this supervisory work is very important from a health standpoint. Ice cream offers a market to dairymen, since large amounts of milk, cream, and condensed milk products are used in its manufacture.

The ice cream offered the consuming public today is recognized as being highly palatable and safe. This statement can be demonstrated by a visit to a modern ice cream plant, where up-to-date equipment with scientific practices are used in the manufacture.

The responsibility for inspection and control rests very largely upon the Dairy Division and plans have been developed that will make for more strict enforcement. In the future manufacturers having two consecutive unsatisfactory laboratory reports or field inspections will be called before the Commissioner of Agriculture for a hearing. Failure to meet the regulations thereafter will result either in closure of the plant or legal action. It was necessary to close three operations during the last biennium.

BUTTERFAT CHECK TESTING

The Dairy Division acts as a referee of butterfat tests. In August, 1949, changes were made in our check test procedure, whereby three samples were secured at five day intervals during a 15-day composite period. This plan affords opportunity to secure a complete picture of a producer's butterfat delivery and serves as a check on the methods and accuracy of sampling and testing used by the buyer. This program is very important to the dairy industry and two of our staff devote their full time to it. During the biennium 887 plant investigations were made covering 29,272 check tests.

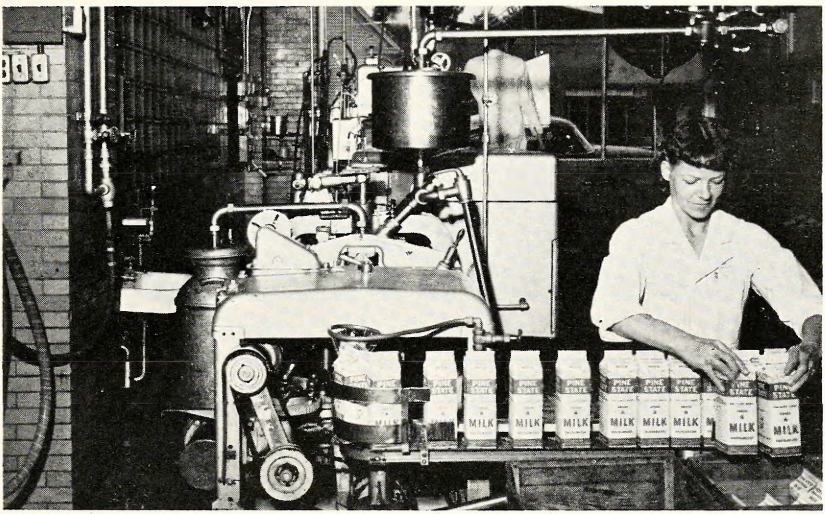
While proper testing technique is very important, we find that other factors such as weigh tank, sampling methods, storage and preservation of samples are the cause of wide variations. The accuracy of a butterfat test is dependent on an accurate and a representative sample. Sample cabinets with refrigeration have been installed in nearly all of the buying plants, and stations and this should make for more accurate results. Licenses have been issued to 130 testers and samplers. The turnover of personnel for this work continues to be quite heavy and this requires intensive training by our field force. Test complaints have been reduced to a low minimum. Special test investigations will be made for producers upon request.

While butterfat tests are variable factors, and will always be a source of suspicion between producers and buyers, we are of the opinion that producers are now receiving the most accurate results ever furnished them.

THE MILK IMPORT ACT

This Act passed by the 1949 General Assembly was designed to prevent poor quality milk from being shipped into the State. Permits are required of the receiving plant within the State and

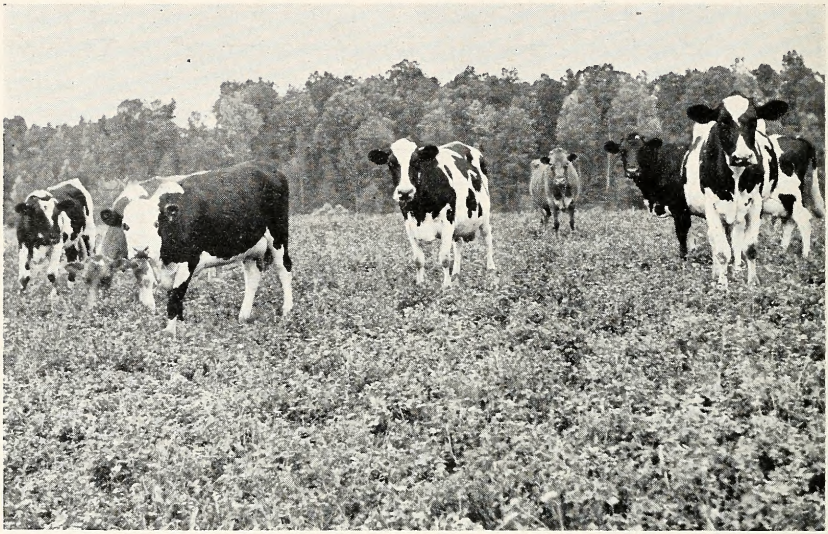
the out-of-state supplier. Field inspections of shipping plant and producing shed are made by representatives of the Division before permits are issued. In addition, sanitary ratings made by responsible health agencies are secured on all applications for permits. Routine samples for laboratory analyses are secured from tankers at time of delivery.



Paper containers are being used extensively for milk and other dairy products.

It has been necessary to cancel several permits and to refuse some applications. Imported milk decreased approximately 25,000,000 pounds in 1949 as compared with 1948. This was no doubt due to the Green Pastures Program and also to the base-use classification schedule established in October, 1949. Every effort has been made to market local milk before import permits were issued and significant amounts of milk were moved from surplus to short markets within the State. A number of small plants are unable to use a tanker of milk and in some instances they join with others in securing their needs. There appears to be a need for a supply station located in a central point whereby these small dealers could be supplied during shortage periods.

Milk consumption in the state is highest during the fall months when production is lowest. The fall demand is accelerated by the opening of schools. The school lunch program uses



The Green Pastures Program has been a factor in reducing North Carolina's milk imports.

250,000 to 300,000 one-half pints daily. This demand offers dairymen a market challenge.

Milk Audit Law and Classification Regulation

The State-wide Milk Classification Order Number V established by the Commissioner of Agriculture effective October 1, 1949, has contributed greatly to a better understanding between dairy farmers and milk distributors. This order has made for stabilization and has made a contribution toward the increased production of milk.

A surplus of Grade "A" fluid milk was produced in North Carolina in the summer months of 1949 for the first time in several years.

Fluid milk produced and delivered to distributors by dairy farmers is not sold at a fixed price per gallon or hundred weight but is rather consigned to be paid according to the use that is made of it by the distributor during a certain pay period, usually a month. This method of payment is referred to as a classified use of milk and greatly affects the average price that is received by producers for their milk.

The North Carolina Milk Audit Law, enacted in 1941, delegates authority to the Commissioner of Agriculture as follows:

To require reports from distributors and processors of milk received and sold.

To establish marketing areas for the sales of milk by producers.

To set up classifications of milk in each area after a public hearing.

After official marketing areas and classifications are established, the Department is charged with the responsibility of auditing plant records and supervising classified payments to producers.

In 1949, State-wide hearings were held relative to setting up legal classifications. Evidence was secured from dairymen, processors and dairy organizations at these meetings. After consulting with dairy specialists at State College and others, the Commissioner of Agriculture proclaimed a state-wide classification for milk delivered by producers to plants. This schedule along with the Milk Import Law is a definite protection to North Carolina dairy farmers. Audits covering sales and purchases in some instances have revealed underpayments of considerable amounts. However, in majority of cases errors and lack of understanding of classification calculation appeared to be principal causes of discrepancies.

Shortage of personnel has made it impossible to verify all payments made to producers. Plans are underway to increase the personnel for this work in the next biennium.

Information secured from dealers' reports has served as a basis for accurate data on production and sales. Monthly summaries are sent to the industry which appear to be well received. For the first time accurate figures dealing with production and consumption are available.

STATISTICAL REPORT

July 1, 1948-June 30, 1950

Plant Investigations (Butterfat Check Testing)	887
Butterfat Check Tests	4,851
Supervised Tests	3,181
Fresh Daily Samples	16,100
3 Day Composite	4,253
TOTAL	29,272

Milk and Dairy Products Analyzed—Official	3,020
Unofficial	610
Ice Cream and Frozen Desserts samples analyzed—Official	2,320
Unofficial	28
Ice Cream Plant Inspections	1,734
Dairy Farm Inspections	1,432
Hearings Held	10
Court Convictions	1
Butter Plant Inspections	16
Cheese Plant Inspections	6
Sediment Tests	1,943
Methylene Blue Tests	350

MILK AND MILK PRODUCTS ANALYSES

July 1948-June 1950

Product	No. of Samples*	Deficiencies in Butterfat	Deficiencies, Excessive Solids Not Fat	Plate Count
Pasteurized Grade A Milk	889	8	112	267
Grade A Raw (Bottled) Milk	535	18	78	253
Producer Grade A Raw Milk	421	10	80	81
Grade C Raw Can Delivery	40	4	7	4
Producer Grade C Raw (Bottled)	14	0	0	1
Cream	324	21	0	164
Buttermilk	53	....	15	.....
Whole Lactic Buttermilk	190	30	90	.....
Creamed Buttermilk	84	30	28	.....
Chocolate Milk	300	85	....	80
Chocolate Drink	170	17	....	40
	3,020	223	410	890

*Samples were not taken at random, but were generally purchased where there were indications of existing deficiencies. Therefore, the ratios of deficiencies shown here are not representative of the State's milk supply.

MINIMUM STANDARDS FOR MILK AND MILK PRODUCTS

	% Milk Fat	% Milk Solids-Not-Fat	Bacterial Standard Plate Count Grade A	Grade C
Milk—Pasteurized	3.25	8.50	30,000	
Milk Raw	3.25	8.50	50,000	
Milk Raw Producer	3.25	8.50	200,000	
Cream	18.00			
Half and Half	10.00			
Buttermilk		8.50		
Creamed Buttermilk	3.25	8.50		
Grade A Whole Lactic Buttermilk	3.25	8.50		
Chocolate Milk	3.25		30,000	50,000
Chocolate Drink	2.00			50,000
Milk Shake	3.25			50,000

ICE CREAM AND SHERBET ANALYSES

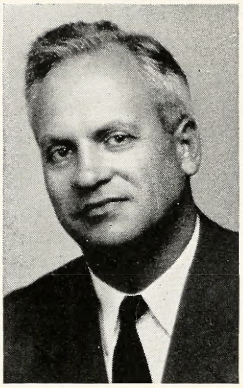
Date	Number Samples	Deficient In Fat*		Deficient in Total Solids**		Excess over 100,000 Bacteria***		Positive E. Coli		E. Coli Too Numerous to Count	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
July 1—Dec. 31, 1948 (Six Months)	651	151	23.19	51	7.83	129	19.81	78	11.98	20	3.06
1949 (Twelve Months)	1,010	271	26.83	106	10.49	272	26.93	388	38.41	214	21.19
Jan. 1—June 30, 1950 (Six Months)	659	157	23.4	45	6.82	147	22.30	163	24.9	118	17.90
Total	2,320										

STANDARDS:
* Butterfat plain—10%
Chocolate, Fruit—8%
** Total Solids—35%
Weight per gallon—4.5 lbs.
Weight per pint—9 oz.
*** Bacteria—Less than 100,000 per gram

While these samples were not taken necessarily as an index to quality, a study of the table shows improvement trends. For instance, the samples for 1950 show closer conformity to standards.

GRADE "A" AND UNGRADED MILK PURCHASED FROM PRODUCERS AND FLUID MILK IMPORTED FROM OTHER STATES AS REPORTED BY MILK DISTRIBUTORS IN NORTH CAROLINA

Year	Grade "A" Milk	Ungraded	Fluid Milk Imported
1941 (June through Dec.)	62,589,208	31,145,376	
1942	120,604,163	68,288,728	9,100,580
1943	133,138,746	99,794,916	30,394,902
1944	145,355,553	101,009,342	26,551,071
1945	162,646,189	118,240,781	38,466,471
1946	172,866,014	104,691,561	65,063,749
1947	216,112,693	111,228,019	63,880,561
1948	256,361,205	96,665,367	78,799,151
1949	339,827,226	75,995,090	53,007,639
1950 (Jan. through June)	210,581,842	29,923,940	13,577,590



C. H. BRANNON

DIVISION OF ENTOMOLOGY

C. H. BRANNON
State Entomologist

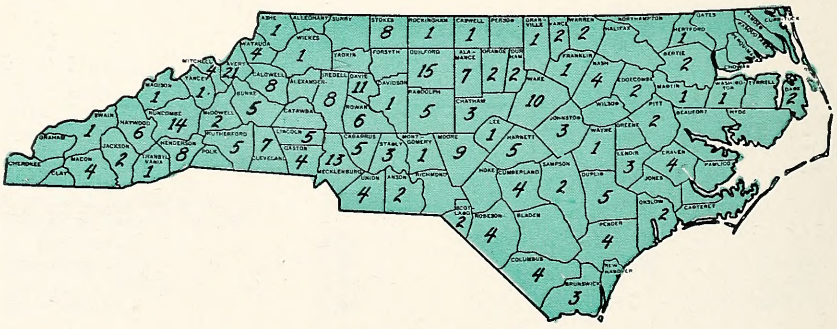
This division administers the North Carolina plant pest and bee disease laws and regulations. There is close cooperation with the U. S. Bureau of Entomology and Plant Quarantine in many projects such as white-fringed beetle, Japanese beetle and white pine blister rust quarantine and control. The Division of Entomology also has a cordial cooperative relationship with the other state entomological workers such as the entomologists of the Extension Service and Experiment Station at N. C. State College. Conflicts and duplications are avoided while a community of cooperation is maintained.

NURSERY INSPECTION

The annual inspection of all North Carolina nurseries has always been a major project of this Division. As a result of careful inspections and hearty cooperation of the nurserymen a high quality product is produced in the state. During the 1948-49 season 248 nursery certificates were issued, and 276 were issued during the 1949-50 season.

DEALER'S LICENSE

Sixty-four certificates were issued to nursery dealers in 1948-49, while 104 were issued in 1949-50.



Number of Nurseries by Counties.

APIARY INSPECTION

Mr. James F. Greene, gives what time he can spare from other activities to this work, and 5,139 colonies were inspected during the last biennium. American foulbrood and sacbrood were found in 97 colonies, which were either treated or destroyed. European foulbrood is found widely scattered over the state.

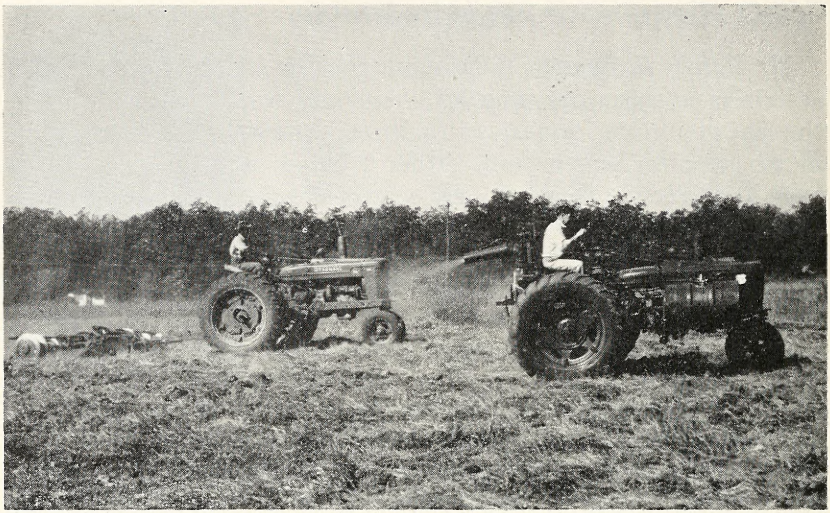
Queen breeders and package bee shippers were carefully inspected. An attempt was made to check on transient beekeepers in order to prevent the spread of diseases.

WHITE-FRINGED BEETLE

The white-fringed beetle work is a cooperative project between the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, and the Division of Entomology, North Carolina Department of Agriculture. The Bureau furnishes personnel, both permanent and seasonal, trucks and spray equipment. The Division furnishes insecticides for both soil and foliage treatments, and its personnel devotes such time to the work as is available. J. A. Harris is in charge of this program.

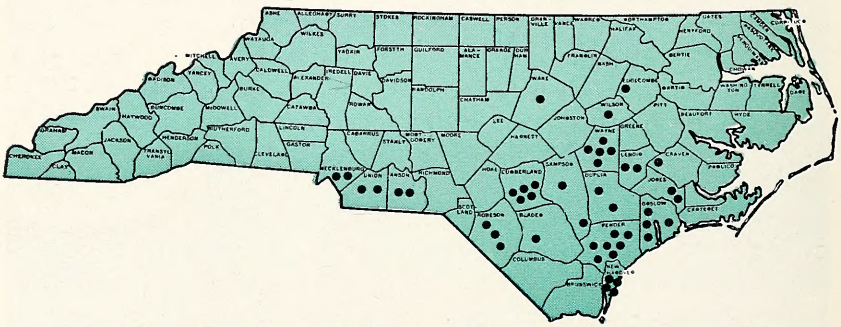
Inspections to determine the presence of white-fringed beetles, both larvae and adults, have been continued each year. In 1948

Spraying for White-fringed Beetle Control.



Applying DDT to soil.

a total of 6,048 man hours were spent on inspection in 42 counties. A total of 22 new infested sites were found with 21 of them located in the generally infested area and one outside this area. In 1949 more than 9,000 man hours were spent on inspection in 35 counties. Additional infested acreage was found in the known infested area, principally in Anson, Union and Pender counties. New infestations were found in Rocky Mount, Edgecombe County, and in Charlotte, Mecklenburg County. As of September 30, 1949, a total of 15,534 acres in 18 counties were known to be infested. Inspections in 1950 located an infestation in Raleigh, Wake County, making a total of 19 counties known to be infested.



Counties Infested with White-fringed Beetles and Number of Infested Localities in Each County.

Applications of DDT, both foliage and soil treatment have been continued. During 1948 a total of 717 acres were given the soil treatment of 10 pounds of DDT per acre. The number of applications of foliage treatment varied in each area depending on population counts, but a total of 18,154 aggregate acres were given foliage treatments. The number of foliage applications varied from one to nine.

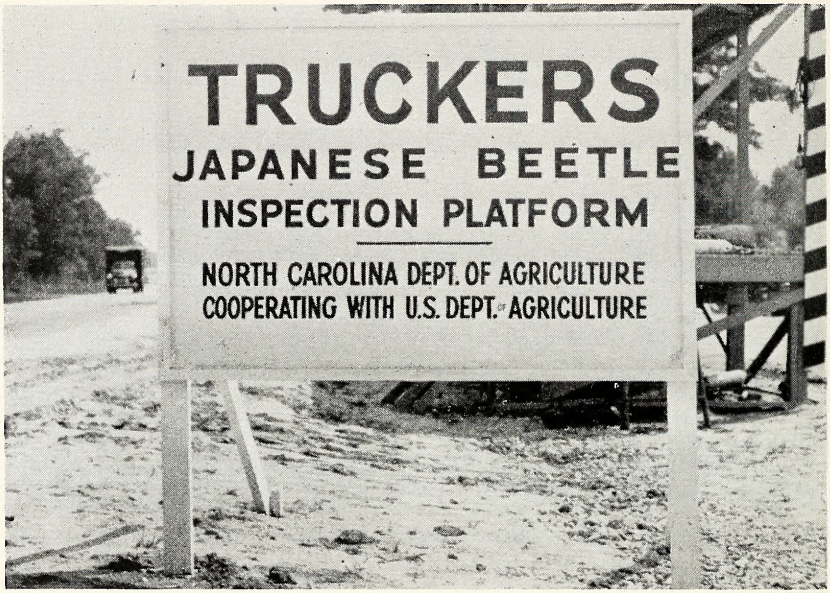
During 1949 a total of 1,283 acres were given the 10-lb. soil treatment and at the close of the 1949 season a total of 3,080 acres had been soil treated since the program started. Foliage applications were applied to a total aggregate acreage of 20,584, the number of applications varying with the density of population of beetles. Planes, concentrate, dilute and hand sprayers have all been used in making the spray applications.

Regulations governing the movement of materials covered by the white-fringed beetle quarantine have been systematically enforced. During the 1948 season 4,606 certificates were issued, 3,853 calls made in regard to regulatory problems and 21 quarantine violations investigated. During the 1949 season 4,841 certificates were issued, and 732 regulatory calls made. All nurseries located in the regulated areas have become eligible for certification by soil treatment with DDT or by construction of necessary barriers.

JAPANESE BEETLE

The Japanese beetle work which is done in cooperation with the U. S. Bureau of Entomology and Plant Quarantine consisted of a scouting program during the summer of 1949. The entire state was thoroughly covered and particular attention given to areas along main highways, shipping points, nurseries and floral establishments. No large infestations were found in new areas. The heavily infested area in Beaufort County was treated with DDT applied to roadsides. An airplane was also used for DDT applications in this area. DDT mist-blower treatments were made in the vicinity of Mount Olive, Calypso, Asheville and Hendersonville.

Trapping was resumed in 1950, and DDT applications were continued. However, since Japanese beetles swarm out over a wide area in the state at one time in the summer, it is obviously impossible for the state and federal governments to treat all sections at the proper time. The expense would also be pro-



Sign warns truckers of Inspection Station ahead.

hibitive. Planes can be used to advantage in many areas and mist blowers are very effective in all sections of the state. Individuals, groups, cities and counties should carefully consider the purchase of a suitable machine for local use at the exact time when Japanese beetles appear in flight. Excellent results can be obtained at a very reasonable cost.

Road inspection stations are operated in the state near the Virginia line on U. S. Highways 1 and 301, by the U. S. Bureau of Entomology & Plant Quarantine in cooperation with the Division of Entomology of this Department, in order to prevent, as far as possible, the spread of the beetle by truck.

The Japanese beetle is now found over a wide area in the state extending from the mountains to the coast.

J. B. Riley, with headquarters at Wadesboro, supervises the State Japanese beetle quarantine. H. O. Windsor is the Federal Japanese beetle representative who is located in Asheville. He is also a State Collaborator.

Bulb Inspection

Each season in the early spring narcissus bulb fields are inspected for nematode control. If it were not for this work the

bulb industry would have scarcely survived the ravages of the eel worm. Sixty-four acres owned by nine growers were inspected in 1949. Four acres on three properties were found infested. In 1950 inspections were made on 107 acres belonging to 10 growers. Five acres on one property were found infested. All infested bulbs were given the standard hot water treatment. The soil was fumigated on one farm. J. A. Harris and J. F. Greene inspected these properties.

EUROPEAN CORN BORER

Inspections during the last two years have shown 17 counties to be infested as follows: Beaufort, Bertie, Camden, Carteret, Chowan, Currituck, Dare, Edgecombe, Gates, Hertford, Hyde, Martin, Pamlico, Pasquotank, Perquimans, Tyrrell and Washington. No economic damage by this pest has been reported. J. A. Harris, Dr. D. L. Wray and J. F. Greene made these inspections.

CAMELLIA FLOWER BLIGHT

A quarantine was issued covering shipments from infected areas in other states. Inspections were made in 1950 on all nur-

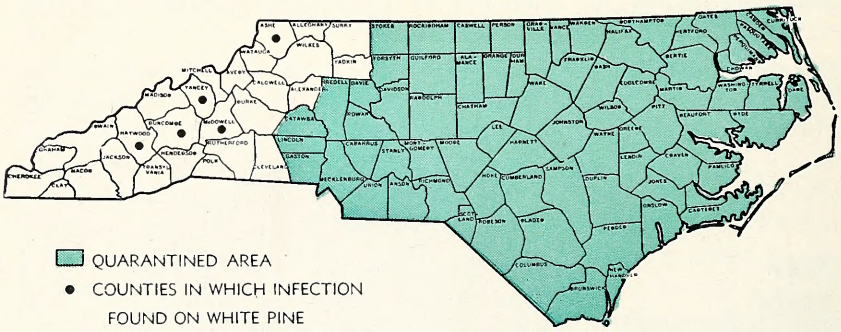
Trucks are inspected to prevent spread of Japanese beetle.

sery properties where camellias are grown in the state, and in most cases two or more inspections were made. One nursery was found infected and a quarantine has been drawn up to cover the infected area. J. A. Harris is in charge of this work.

WHITE PINE BLISTER RUST CONTROL

This work is carried out in cooperation with the U. S. Bureau of Entomology and Plant Quarantine. The serious threat of infections from Virginia spreading to the white pines of North Carolina started a preventive program fifteen years ago. Ribes (currants and gooseberries) the alternate host of the disease were systematically eradicated in the areas likely to become infected. Therefore, when the disease was found on Ribes in 1941 the control area was in excellent condition to be maintained relatively free from serious infection. Infection on white pine was found during 1945 in Ashe county. It has since been found on white pine in McDowell, Yancey, Buncombe and Haywood counties in the order mentioned.

Walter A. Stegall is the Federal Field Supervisor in charge of the program, with headquarters at Asheville. Excellent re-

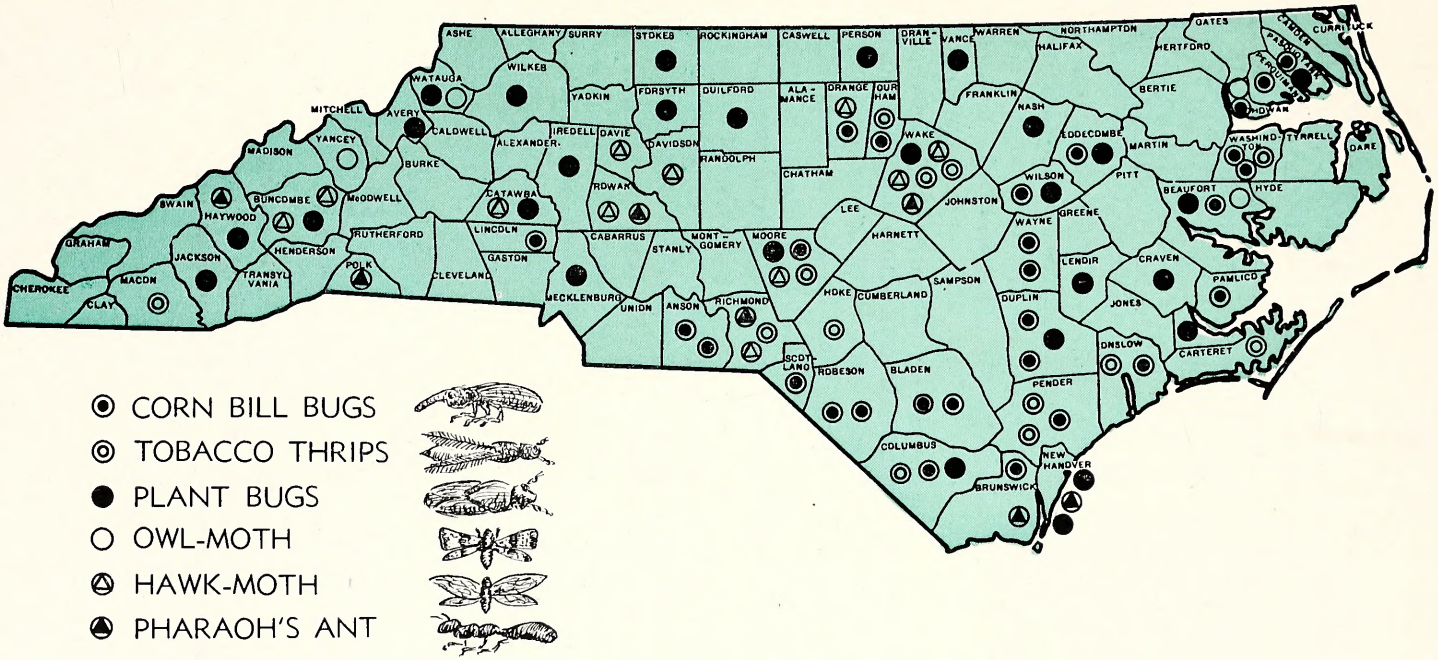


Blister Rust Control Area.

sults have been obtained and the state should remain relatively free from blister rust disease as long as the maintenance work now in operation is carried out under adequate supervision.

INSECT COLLECTION AND SURVEY

Dr. D. L. Wray is in charge of the Division's excellent collection, which is one of the best in the country. A second supple-



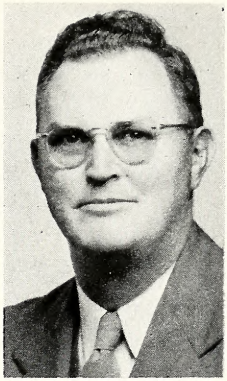
Some Common Insects of North Carolina and Where They Are Found.

ment to the insect list published in 1938 is being prepared for early publication. Many species are identified, and entomologists from all over the State and Nation consult the collection and literature at frequent intervals. Dr. Wray has undertaken an intensive survey of the *Collembola* of the state which has been a long neglected group of insects.

Additional cabinets, equipment and space are urgently needed to handle the survey and to properly care for the rapidly expanding insect collection.

DIVISION OF MARKETS

JOHN A. WINFIELD
Director



JOHN A. WINFIELD

The primary objective of the Division of Markets is to improve and protect the welfare of farm people. In order to do this, Division personnel must keep abreast of agricultural conditions throughout the state and nation, because these conditions, which have a direct bearing on the economic status of farm people, are constantly changing.

From a state standpoint, there were noticeable changes in the marketing of farm commodities during the 1948-50 biennium. Much of this was brought about by increased production of so-called deficit commodities. The acreage control program meant a reduction in acreage of customary crops, but better production and management practices increased yields of these crops.

At no time during the last decade was there a greater demand for marketing services than during the 1948-50 biennium. This included demands from producers and handlers for information and assistance in establishing new marketing facilities, organizing new markets, and assisting in processing, packaging, handling, transportation, distribution, and merchandising.

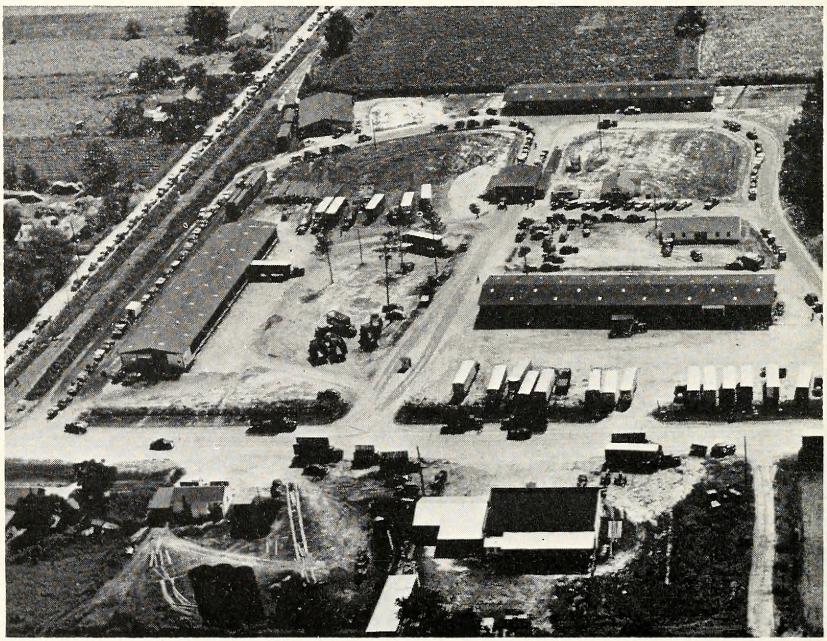
A summary of activities in the various phases covered by this Division follows:

FRUITS AND VEGETABLES

Record production of fruits and vegetables during the 1948-50 biennium presented greater problems in the marketing services and regulatory and inspection work than in any previous biennium. To meet these surpluses, the Department worked with various branches of the produce industry. In doing this, they aided in the opening of several new auction markets; one for sweet potatoes was opened at Bethel, N. C., in the fall of 1949 and one for sweet corn in Hyde County in 1950. The Department assisted in the survey and opening of a new fruit and vegetable auction market at Hendersonville.

The Hyde County project is a new undertaking. The Extension Service, Division of Markets, producers, and civic organizations in the county cooperated closely in this project due to the need for new sources of agricultural income. The soil in the county is not suited for tobacco production. Specialists with the Division and Extension Service worked closely with producers during the growing season in introducing good management practices and proper methods in applying insecticides for worm control. When the corn was ready for harvesting, instructions regarding the proper stage of maturity were given producers, and grading and packaging demonstrations were held. Buyers with local chain stores and independent outlets were contacted by the Division Specialists and representatives were sent to the area. The corn was sold to these representatives, and it was received more favorably than that from some of the older producing areas in the state.

Approximately 10,000 crates, each containing five dozen ears, were marketed. Producers in the area plan to expand corn production next year and to add a few more commodities in the



Aerial view of produce market at Clinton, N. C.

View of auction shed at Hendersonville produce market.

fruit and vegetable field which are believed to be adaptable to the area and in demand at local markets.

Production of fruits and vegetables in the Hendersonville area of Western North Carolina is handled in two different ways. Either large outside handlers contract for acreage or independent producers, owning land, finance their own operations. The primary problem in this area is the lack of market outlets for the second group. Specialists with the Department and Extension Service, at the request of the Hendersonville Chamber of Commerce and a private group, made a quick survey in the area to determine the variety and amount of fruits and vegetables produced by the two groups. As a result of this survey, an auction market, capitalized at $30,000, to handle all kinds of fruits and vegetables was established in Hendersonville. Three Specialists, two with the Department and one with the Extension Service, began working on grading and packing problems during the latter part of June with the new market and producers in the areas. This program continued through July and August. Preliminary reports indicate that the market will handle a large volume of merchandise, and that it will be the solution to a problem existing in that area for ten years or longer. Snap beans, cucumbers, cabbage, squash, peppers, and early apples are expected to account for the bulk of the commodities handled by the Hendersonville market.

Lettuce growers in New Hanover and Pender counties were being forced out of the lettuce business because of poor packing and selling practices. Prior to this year, most of the lettuce produced in North Carolina moved to Eastern terminal markets in 5-peck or bushel hampers while iced Western lettuce in crates moved into the state. Growers in the two counties, through their Extension agents, requested help from the Division of Markets before this year's crop was set.

At preliminary conferences with producers and their County Agents, it was decided to work toward establishing an f.o.b. market at one of three packing houses in the area and to limit the area to a small section of New Hanover County. This was done, first, because of limited personnel in the Division; second, because a completely new program was being inaugurated; and third, because the packing shed belonged to a growers' cooperative. The Division was given full responsibility in completing arrangements for grading, packing, and selling the Iceberg lettuce in the area.

This responsibility was accepted because our Specialist in retail merchandising was able to get full cooperation of all wholesale distributors in the state who were cooperating with the retail program in fruits and vegetables. Definite commitments to handle the Iceberg crop were made by this group provided the quality was good, the packaging was in crates, and the lettuce was iced. Our Specialist in initial marketing accepted the responsibility for this job, along with transportation arrangements, and load breakdowns. Daily prices paid producers were based on wholesale sales of Western lettuce in similar packages on the New York and Philadelphia markets as reported by the Market News Service. The quantity of Iceberg lettuce marketed was 5,073 crates. Comparative returns were more than any growers expected. The trade was happy with the lettuce.

Commercial sweet potato production is rapidly expanding in North Carolina. Plans are underway at present to open two new auction markets, one at Dunn and the other at Benson. Division Specialists have already attended five conferences with County Agents, trade groups, and producers to review plans and facilities looking toward the opening of these markets. In fact, specific recommendations to build one auction shed and unloading platform between the two towns, which are only eight miles apart but in different counties, were made by Specialists with the Division. This was done so buying forces could be cen-

tralized and storage and curing facilities in both towns could be used as well.

North Carolina ranks among the top three states in the total production of sweet potatoes, and a large part of the crop cannot be marketed through fresh markets. To aid in the utilization of these off-grade stocks, more than 2,000 tons of strings, cuts, badly misshaped, and jumbo potatoes were dehydrated during the biennium.

These dehydrated potatoes, which were about equal to corn in feeding value, were sold within the state for the manufacture of feed products. Some were sold directly to dairies.

Due to the large crop this year, it is expected that a much greater part of the crop will be utilized through dehydration, and a more constant supply can be furnished to those who use this product.

The Marketing Specialist in fruits and vegetables conducted 24 classes during the biennium which were attended by 597 Veteran trainees in six Western North Carolina counties. The classes were held at the request of Veteran instructors. Grading and packaging demonstrations dealing with the principal fruit and vegetables produced in the area, namely, snap beans, cabbage, potatoes, and sweet corn, were given. The Specialist also attended and participated in conferences with Extension workers, Research and College instructors, and other fruit and vegetable Specialists of the Department to plan an overall program in seeking solutions to marketing problems in fruits and vegetables. These meetings were held in Raleigh.

The system of merchandising fruits and vegetables in retail stores in North Carolina shows a wide variation. Some stores are unsanitary and make no attempt to display the produce other than to leave it in the container in which it was delivered. In many cases, these are left in front of the store on the sidewalk where the products deteriorate quickly. A small percentage of retailers are doing a fair job of merchandising and only a few are doing a good job.

Our retail Specialist, working through seven wholesalers, has already reached directly or indirectly approximately 2,000 retail stores in the state. Most of these stores were reached through produce schools held in small stores in outlying communities or by training salesmen from the seven wholesalers who do a considerable amount of preliminary work assisting the retailers on how to trim, display, and sprinkle fruits and vegetables.

Bulletins have been sent to several hundred stores that we plan to contact in the near future. These bulletins give an outline of the work contemplated, as well as ideas regarding needed equipment and its cost. This method makes our work easier on arrival, and we are able to help a greater number of stores.

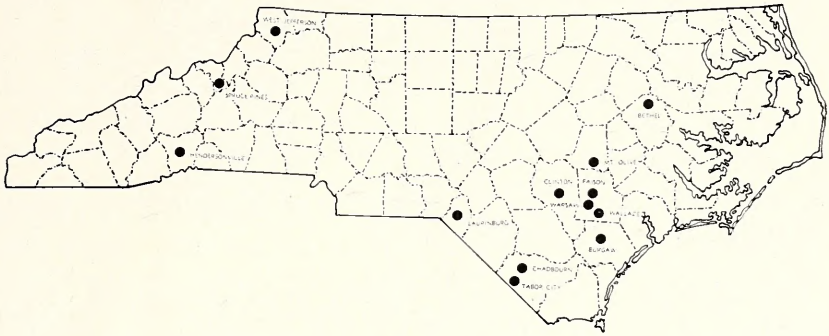
A large number of retail stores in the state are changing over to self-service, while many of the traditionally operated stores are installing new fruit and vegetable racks with one or more refrigerated units, depending on volume of business. Many of the smaller stores visited did not feel that they could afford new equipment. In such cases, we helped them to reconstruct their old equipment and make it more suitable for holding and displaying fruits and vegetables and thereby increasing their sales. Seven new independent super-markets opened in the Piedmont area where we concentrated our work. Sales increased sharply. Reports from one super-market, which did approximately $2,400 per month in produce in the old store, now indicates that the improved market does approximately $32,000 business per month in produce. We are making every effort to help both the large and small retailer, and we believe the work is beneficial because of the many requests that we have for assistance.

We find that in working through the service wholesalers we can move a large tonnage of North Carolina fresh fruits and vegetables through local outlets and thereby get the farmers of the state a greater share of the consumer dollar. Such a practice has been a great help to the various sections of the Division of Markets, as was evidenced in moving large amounts of locally grown lettuce, cabbage, sweet potatoes, and strawberries. This tends to solve some of the distribution problems for various farm commodities in the state.

The Specialist was assisted in this project by various dealers and wholesalers in the cities of Charlotte, Greensboro, Concord, Kannapolis, Raleigh, and Durham. Owners and managers of both private and chain stores have cooperated very closely by sponsoring the retail merchandising program, and helping the Division greatly in moving locally produced fruits and vegetables, as well as those grown outside the state.

The inspection and certification of fresh fruits, vegetables, and peanuts is a major function of the Division of Markets. This service is performed by licensed personnel employed by the Division.

In addition to inspection and certification work, the men are trained and instructed to render further assistance to producers and handlers in the proper harvesting, grading, packing, and



Locations of produce auction markets.

handling of the various commodities they are assigned to work. During the fiscal year 1949-1950, the volume of inspections exceeded any previous year. This was largely due to the fact that the Commodity Credit Corporation designated the shipping point inspection service as the agency to certify the grade of all farmer's stock peanuts eligible for price support which totaled slightly more than 90,000 tons.

During the fiscal year 1948-1949, the Division employed 193 licensed inspectors, and 300 during the 1949-1950 year. These men were employed on a temporary basis, and were paid from fees collected for services rendered.

The following is a summary of inspections for the 1948-1950 biennium:

Commodity	1948-49	1949-50
Apples	58½	36½
Beans, Snap	563	578
Cabbage	207	305
Cantaloupes	10	10½
Corn, Green	207	223
Cucumbers	492	488
Eggplant	8	22
Lettuce	0	12
Peaches	439	324
Peanuts, Shelled	1,456½	406½
Peanuts, Farmers Stock	0	7,823½

Peppers	635	685
Potatoes, Irish	9,565	12,355
Potatoes, Sweet	620	846
Squash	76	62
Strawberries	384	300
Watermelons	23	28
Miscellaneous	16½	13
TOTALS	14,760½	24,518½

NOTE: The above figures are cars or carlot equivalents based on standard customary car loadings.

In addition to the above shipping point inspections, four members of the Division's staff and one Federal employee who are authorized to make inspections and certifications of produce shipped into North Carolina, inspected the following quantities of fruits and vegetables:

Carlots *(Commercial)*		Pounds *(Military Installations)*	
1948-1949	1949-1950	1948-1949	1949-1950
303½	416½	5,037,756	3,090,401

NOTE: Approximately one-half of the produce inspected for military installations was locally grown.

In addition to the above, approximately 640 cars of seed potatoes shipped in from outside the state were inspected during the biennium. This work is performed by licensed personnel employed by the Division.

Enforcement of the Handlers Act, (Article 44 of Chapter 106 of the *General Statutes of North Carolina*) is carried out by the Fruit and Vegetable section. All contracts entered into by manufacturing and processing companies with producers in North Carolina must be checked and approved. During the harvesting season for the various commodities, the section sends out various personnel to make certain that contractors are fulfilling their obligations to the farmers and growers.

COTTON

Cotton contributes between 75 and 100 million dollars annually to the agricultural income of North Carolina. It is grown

in 65 of the State's 100 counties in balance with one or more other cash crops. Paradoxically, the adaptability of cotton to diversification and balance of farm activities accounts for low grades—our chief handicap as a cotton growing state. The seriousness of this handicap is experienced most forcibly in marketing channels—and, appropriately enough, determines the cotton program of the Markets Division.

The low grade index of North Carolina cotton has three serious aspects, (1) reduced income from cotton production, (2) perpetuation of obsolete marketing practices, and (3) loss of reputation and popularity with cotton spinners. There are no regulations with respect to custom gin service. Consequently, our procedures had to be based entirely on what could be done through individual contacts and promotional activities. Since custom gin service has come to assume full responsibility for pre-marketing processing and, in recent years, has undertaken to offset deficiencies in harvesting and pre-ginning care on the farm, the Department's cotton program is concentrated on technical assistance to the ginning industry.

During the closing few weeks of the last biennium, two Ginning and Marketing Specialists were added to the staff of the Cotton Section. Their immediate assignment was to inventory and check the ginning facilities in the state for (1) adequacy of equipment, (2) state of adjustment and repair, and (3) operating technique. These Specialists were qualified to give on-the-spot recommendations for improving existing equipment and operating procedures as well as engineering recommendations with respect to new equipment and major improvements.

In carrying out this program during this biennium, a total of 1,489 routine calls were made on individual ginners. More than 200 of these calls were in response to requests for special assistance. Besides carrying on the inspection program, the Specialists were consulted in planning 160 major improvements, (improvements costing $10,000 or more are considered major improvements), planning 42 completely new gin plants, and designing and installing three special seed storage facilities. Technical assistance to ginners also included engineering 13 new planting seed delinting and treating installations.

Promotional activities were directed toward improving inter-interest relationships within the raw cotton industry, and between the interests and state and government agencies concerned with cotton. This activity not only kept the Specialists

in close contact and working relationship with interest organizations but served to integrate our program with the cotton programs of other state and federal agencies.

A special project set up for the calendar year 1950 was organizing ginner groups at county level to mobilize the industry in support of cotton improvement programs of the various agencies. At the close of the biennium, 21 counties were cooperating with this project. The county groups meet monthly to discuss problems of mutual interest and what they as ginners can do for the welfare of the raw cotton industry. There is no fixed pattern of procedure within the organization. To date, their activities include publicity campaigns with respect to insect control, more efficient production practices, improved harvesting methods, direct assistance to their customers in marketing cotton, and elevating the standards of custom gin service. There are no criteria for appraising the results of promotional activities, particularly so when more than one organization or interest is concerned with the same objective. However, it may be noted that since the inauguration of technical service to the ginning industry, the percentage of rough preparation, or gin damaged cotton, has dropped from 16.4 in 1947 to 5.0 in 1948 and 1949 (the period covered by this report). This reduction in rough preparation is estimated to have increased the value of the 1948 crop by $667,000 and the 1949 crop proportionately. Ginning, or preparation, is a grade factor. Parallel with the improvement of gin service, the grade factor of North Carolina cotton rose from 89.3 in 1947 to 92.4 in 1948 and 92.0 (estimate) in 1949.

In addition to specific assignments, field activities included surveys on fire hazards in cotton gins, business customs and usages within the industry, and seed marketing problems. A special survey was made with respect to establishing a fiber testing laboratory service. Plans for this laboratory have been developed and request submitted for its establishment as a project under the Research and Marketing Act of 1946.

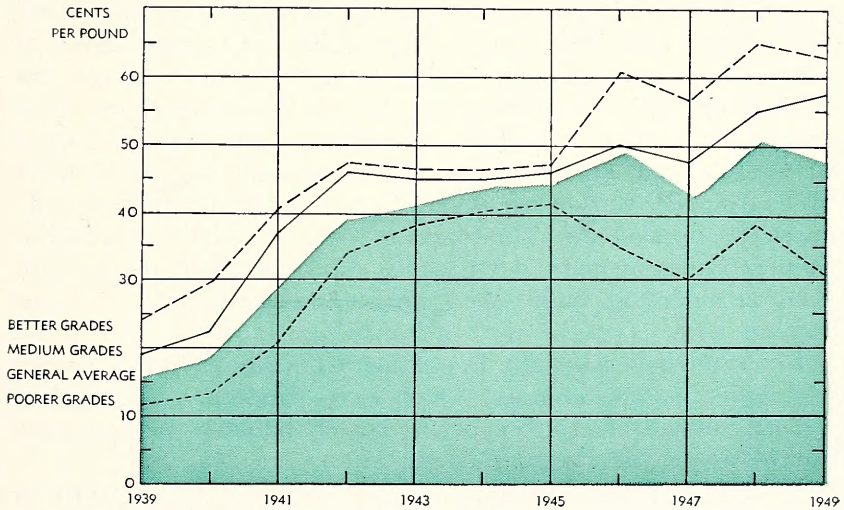
TOBACCO

The marketing program under the Tobacco Section was expanded during the biennium by adding one Tobacco Marketing Specialist. With the assistance of the Research and Marketing administration, this expansion increased the services to tobacco

growers, warehousemen, dealers and processors in the various functions of marketing tobacco. The RMA program is conducted in cooperation with other state and Federal agencies to prevent overlapping in work.

Demonstrations were conducted in ten counties on the use of U. S. Standard grades and the application of these standards so that growers would receive the true market value for their tobacco. These meetings were attended by more than 1,000 growers.

Growers were assisted in organizing cooperative warehouses on the Wilson, Kinston, and Greenville markets. Preliminary assistance was also given one grower group in Lumberton. These cooperative houses handled for producers during the biennium 22,176,902 pounds of tobacco valued at $10,732,306.



Price Trends of Flue-Cured Tobacco, Types 11-14.

During the 1949 marketing season, some tobacco which had questionable characteristics appeared on the flue-cured auction markets. This tobacco was generally refused by buyers. In tracing the cause of these characteristics it was discovered that anthracite coal curers were responsible for some of the trouble. However, tobacco cured by other methods also was questioned. Growers were assisted in disposing of about six million pounds of this tobacco at a minimum loss.

In 1949-1950 the Tobacco Section brought together pertinent marketing information and for the first time published an annual Tobacco Report for North Carolina. This edition strongly emphasized suggestions that would help growers command the best market price for their tobacco, by giving more attention to sorting, grading and preparing for market. The publication was sent to 5,000 growers and others in the tobacco industry.

One of the Tobacco Specialists appeared before the House Ways and Means Committee in opposition to a Graduated Excise Tax on cigarettes. This tax was believed to be detrimental to the growers' interest.

Assistance was given in organizing the National Tobacco Tax Research Council. This Council was organized to aid in halting the ever increasing tendency of states, counties, and cities to place additional taxes on tobacco products.

During the 1948-1950 biennium, 63 farm and warehouse demonstrations were held in the flue-cured and burley areas of North Carolina. These meetings were arranged through the cooperation of the Extension Service, vocational teachers, farm organizations, and warehousemen. Burley growers were aided in working out such problems as warehouse charges, spacing of baskets on warehouse floors, removing small baskets, and questions of weights. This service work is conducted under a cooperative agreement with the U. S. Department of Agriculture, Production and Marketing Administration, Tobacco Branch.

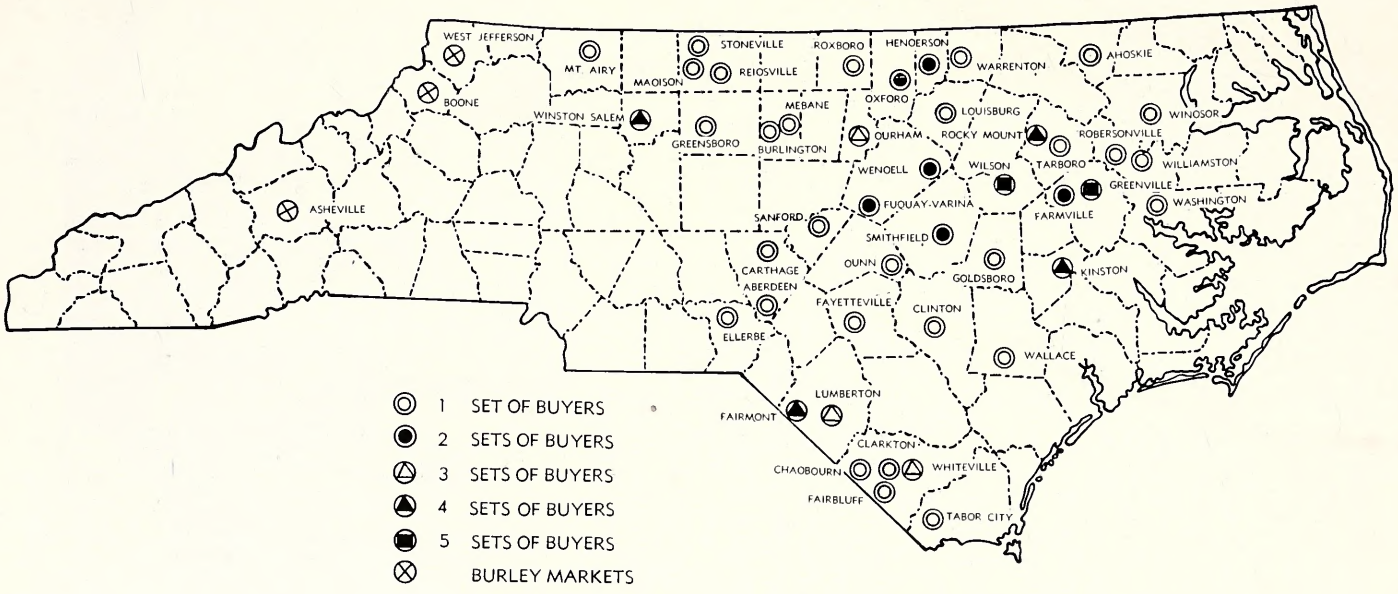
As directed by law, the Department issued a monthly report on tobacco warehouse sales. These were distributed to a mailing list of 1,000, including members of the industry, press, radio, and civic and farm organizations.

Information and assistance were furnished to growers in areas where marketing facilities were inadequate. These areas were Ellerbe, Windsor, and Greensboro.

FIELD CROPS

The rapid increase in production of all grains in North Carolina has demanded better marketing practices through harvesting, drying, storing, and processing facilities.

North Carolina now produces 70 million bushels of corn, 10 million bushels of oats, seven million bushels of wheat, four million bushels of soybeans, plus barley, rye, and grain sorghums.



Flue-Cured and Burley Tobacco Auction Markets, 1949-50.

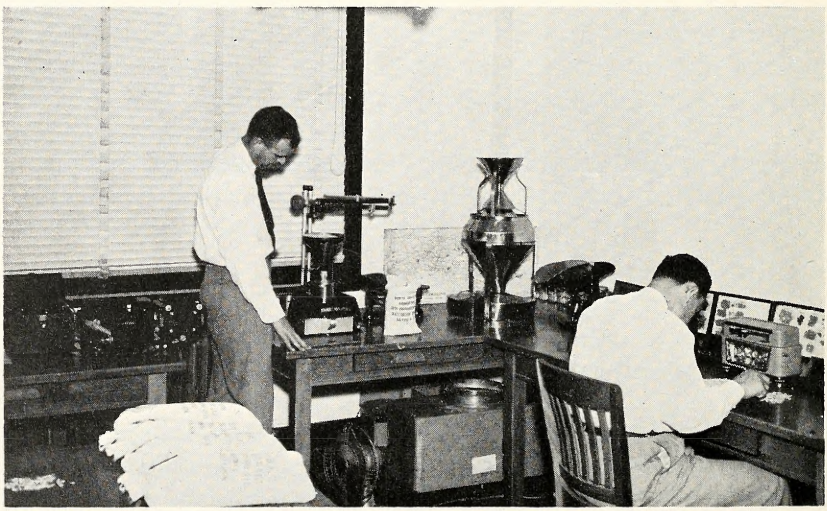
This is approximately 100,000,000 bushels of grain with inadequate storage on and off the farm.

The increase in production over the last two years has resulted in more grain being sold to processors. With this condition existing, it was, and still is, necessary to erect more drying and storing facilities if the farmers of this state are to receive the maximum for their grain.

A beginning was made during the 1948-50 biennium to erect modern elevators and dryers for handling off-the-farm storage of grain. (See table below.)

Year	Storage Capacity (Bushels)	Drying Capacity (Bushels Per Hour)
1948-1949	300,000	2,500
1949-1950	450,000	1,300
Completed in biennium	750,000	3,800
Planned for 1950-1951	720,000	1,800

The above modern storage and drying facilities will make it possible to keep quality grain safely over a twelve-months period. This will assure local manufacturers a constant supply of grain to meet their demands. Through a marketing program of this nature, surpluses at harvest season, which always result in a depressed market, can be avoided.



N. C. Department of Agriculture Grain Grading Laboratory.

Grain grading demonstrations were conducted in all grain producing areas with farmers, buyers and processors attending. Plans to promote the use of established Federal grades in grain marketing were emphasized.

Through the efforts of the State Department of Agriculture, a substantial saving to North Carolina farmers has resulted from the use of U. S. official hay grades. Hay can now be bought on U. S. Grades with certificates attached. This assures the purchaser receiving the quality of hay he has ordered. At least three states are shipping hay into North Carolina on U. S. Grades, and two large hay brokers in this State handle hay only on U. S. Grade basis.

Operators of seed cleaning plants were visited and instructed in the preparation of seed for market so as to improve the quality of the product. Lespedeza seed particularly have been steadily improved by better handling and cleaning practices.

The Grain Section of this Division has cooperated with N. C. State College on research and Extension problems in grain marketing. It has also cooperated with the Production and Marketing Administration in grading grain for farm storage loans.

LIVESTOCK

The Livestock Section of the Division of Markets is a service agency primarily interested in the marketing of livestock. It has two objectives: securing breeding animals for commercial livestock production, and marketing the increase when grown out and finished for market.

Due largely to the increased acreage in pasture, this service has expanded more rapidly in the last two years than in any period since the inception of this work.

In addition to the commercial livestock placement and marketing of finished animals, the following services have been rendered by the Division or in cooperation with other institutions, primarily the State College of Agriculture: (1) aid in feeder calf sales, (2) conducting livestock schools, (3) cattle surveys, (4) conducting purebred livestock sales, (5) working with 4-H Club members, (6) purchase of purebred sires, (7) holding lamb pools, (8) holding wool pools both in the East and West, and (9) aid in fat stock shows.

The problem in livestock and meat marketing is lack of organization in methods of handling and marketing livestock and

meats, with prices and quality showing very little actual relationship. The purpose has been to bring about certain improvements, particularly in facilities for handling livestock sales, selling on a quality basis, and moving cattle and sheep from areas of low feed production to the areas of a plentiful feed supply; and to encourage the proper slaughtering of good quality animals and the establishment of markets that will absorb quality products at true market prices.

The Livestock Marketing Specialists have helped to carry on projects in livestock, sheep, and the grading of meats. They assisted in assembling, grading, handling and selling 10,000 lambs through nine local pools. These lambs were graded as Choice, Good, Medium, Common, and Culls, and sold in carload lots to the highest bidder. Pool sale prices averaged from five to 10 per cent above small lot sales at local markets. In addition, Specialists helped with the handling, pooling, and selling of about 115,000 pounds of wool. This wool was assembled in strategic locations and classed and bagged according to best commercial practices. Pool prices averaged from two cents to 10 cents per pound above individual sales.

The Division assisted in the purchase and resale of 1,500 stocker and feeder cattle. These cattle were purchased in surplus producing areas of the State and placed among farmers in the Piedmont and Eastern areas where cash crops are being reduced and feeding and grazing crops expanded. Most of these animals were purchased as calves, with 85 per cent females, some of which sold for $50 to $75 above cost after handling for six to nine months. Practically all could have been sold for corresponding profits, but many new farmers are building small herds. The feeder steers showed about the same gross profit after fattening.

In addition, 850 breeding ewes were imported from Texas and Tennessee and placed with farmers to increase the production of spring lambs in the State. More than 1,600 others from Montana have been placed since July 1. A total of 160 purebred rams were placed during the two years.

A beef marketing survey was conducted among 75 representative restaurants in the State as part of a program to determine the kind of beef preferred by the trade and the feasibility of inaugurating a beef grading service to overcome prejudice against locally produced beef. A similar survey among slaughterers and retailers will be made this winter.

The following numbers of cattle and sheep were purchased for growers and distributed throughout North Carolina during the last two years:

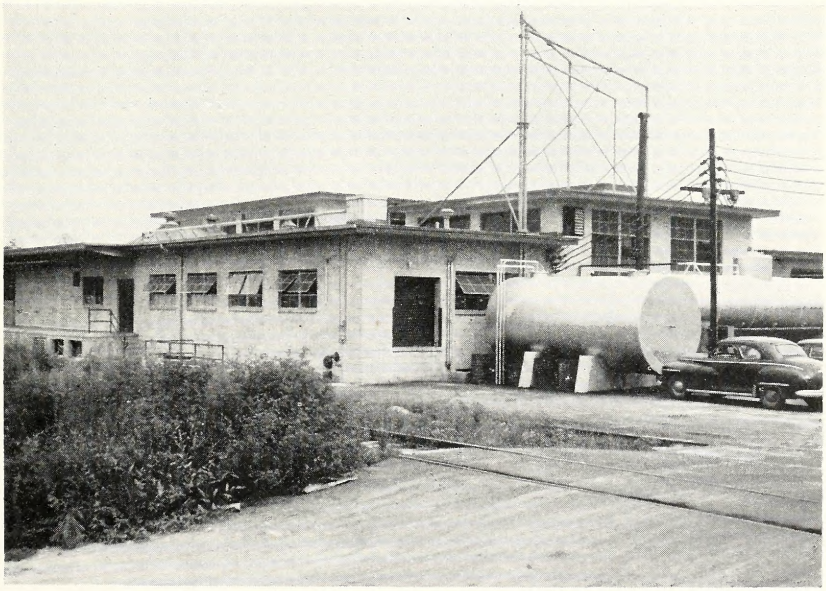
Cattle:

Breeding cattle (females) 1500
Purebred bulls 30
West Jefferson calf sale 564
Steers for market 1000

Breeding cattle were sold mostly in the eastern half of State. Steers were sold on slaughter market, both local and eastern.

Sheep:	**1949**	**1950**
Breeding ewes	1000	2700
Purebred rams	40	120

Sheep were placed largely in Piedmont and eastern North Carolina.



One of North Carolina's newer meat packing plants.

POULTRY AND EGGS

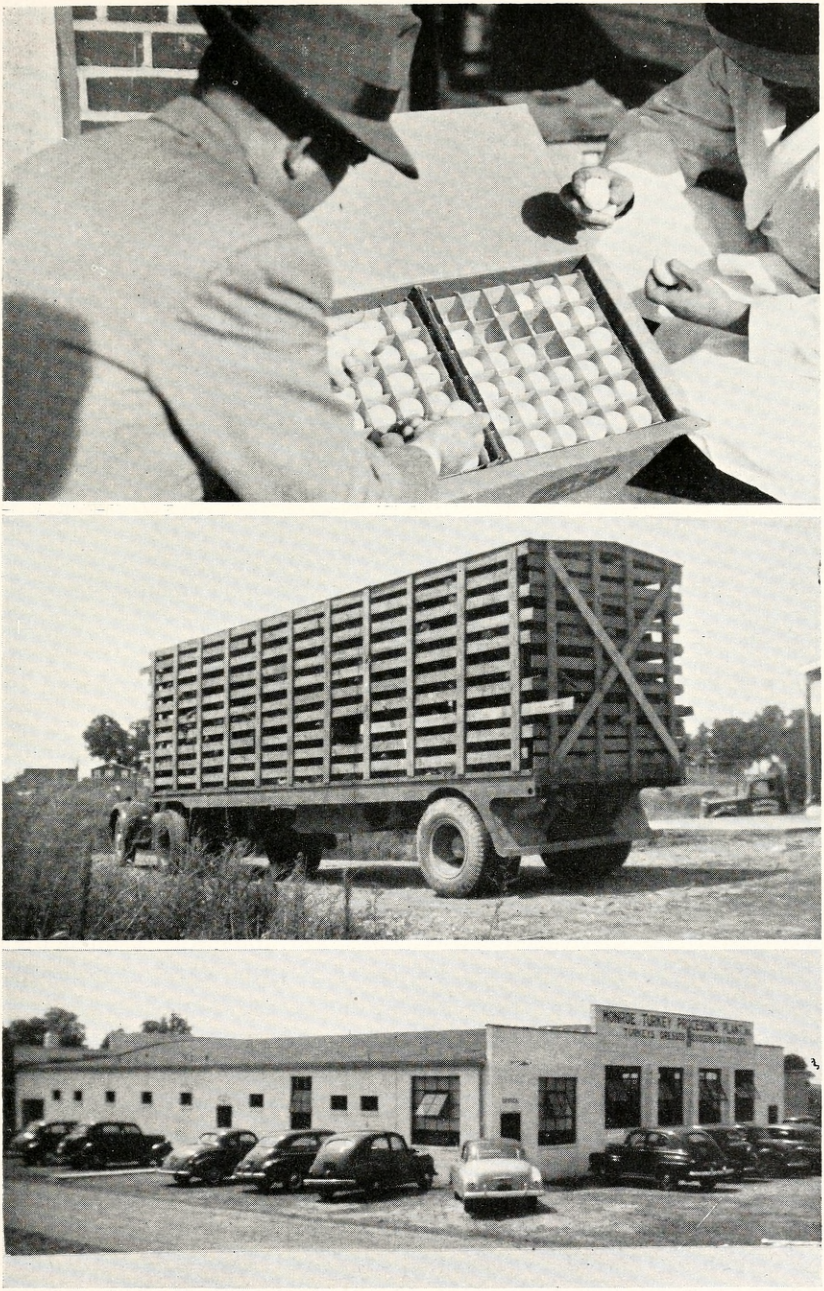
The poultry processing industry in North Carolina probably made more progress during this biennium than during any other in recent years. This phase of the industry realized that consumers had begun to demand high quality poultry processed under sanitary conditions and packaged in an acceptable manner.

The poultry industry in general reacted very favorably to these changes and, as a result, a better distribution of poultry and eggs was made. There are five processing plants in North Carolina that are cutting up and freezing individual birds. These plants are distributing throughout the State to retail stores and eating establishments that have facilities for handling frozen foods. This method of freezing and packaging has made possible a wide distribution, which in turn has created a great demand for poultry.

Specialists of the Poultry Section of the Division of Markets helped plan six modern processing plants with chain operations. Assistance was also given in planning numerous other small hand-operated plants and remodeling and installing new equipment in eight other plants. There are 38 chain operated plants in this State and about 100 other small, hand-operated processing plants which are located throughout the State. The strategic location of these processing plants makes possible a sound distribution system of fresh, ice-packed, dressed and drawn poultry which comprises about 90 per cent of the poultry sold in North Carolina.

Federal-State grading of ready-to-cook poultry and turkeys, along with Federal inspection, were inaugurated during the biennium in one plant. This service made it possible for early maturing turkeys grown in this State to be moved to market through the Quartermaster Market Center and other marketing agencies that require poultry and turkeys to be Federally inspected and graded. A total of 2,059,915 pounds of turkeys were officially graded for this plant during the biennium.

Veteran facilities located in North Carolina were given permission to buy poultry from North Carolina processors that do not meet U. S. Department of Agriculture plant specifications, due to some technicality in building or plant facilities, provided the product is graded by this Department. Slightly more than 175,000 pounds of poultry from these plants were graded for veteran hospitals by personnel of the Poultry Section. Move-



(1) Grading and inspecting eggs for private organizations and state institutions is one of the services of the Poultry Section. (2) Specially built trucks are recommended for transporting turkeys to processing plants. (3) Poultry and turkey processing plants afford outlets for N. C. grown poultry and provide regular or part-time work to hundreds of North Carolinians.

ment of poultry through this outlet helped, to a great extent, relieve temporary surpluses that developed, thereby providing a better outlet for North Carolina grown poultry.

One of the worst surpluses of broilers in recent years developed in January, 1950. Prices to broiler producers reached a low of 18 cents per pound live weight which was several cents below cost of production. This condition was foreseen by Division personnel, and a consumer program was inaugurated with the aid of processors, consumers, the press, radio, and retail stores. As a result of this promotional campaign the price of broilers moved back to normal within two weeks.

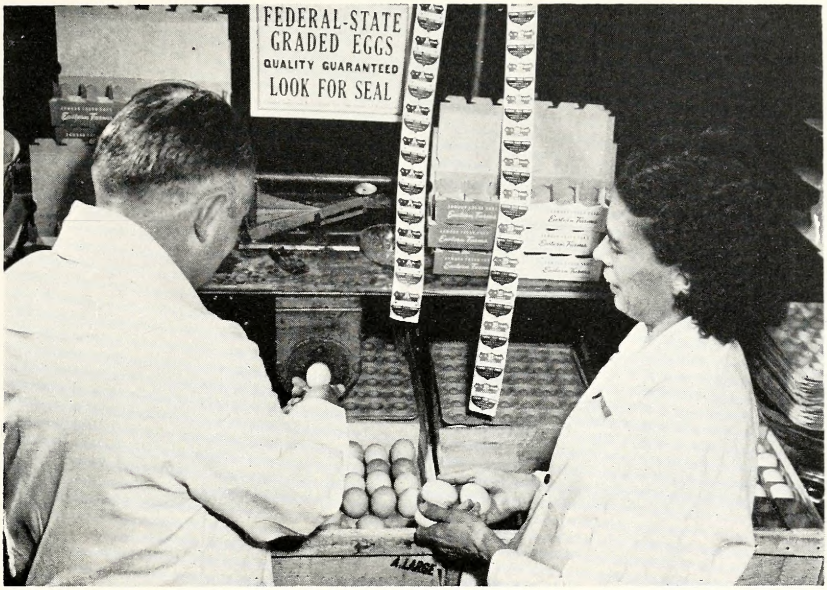
Seven Federal-State egg grading stations located in Asheville, Durham, Greensboro, Raleigh, and Wilson operated during the biennium. Graders at these stations certified 126,201 cases of eggs according to U. S. Standards and Grades. Approximately 10,201 cases were packaged in one-dozen cartons under grade labels. Since these official egg grading stations bought eggs on the basis of grade, they served to some degree as a means of teaching local producers how to care for their eggs on the farm. This is resulting in better and cleaner eggs being produced in North Carolina.

Poultry Specialists of the Division trained and recommended for licenses 20 egg graders, and trained 15 other people to grade eggs unofficially.

Personnel of the Poultry Section worked with the Purchasing Division of the State Highway and Public Works Commission and the State Hospital in Raleigh in inaugurating a program whereby these institutions would buy only officially graded and inspected eggs. More than 7,400 cases of eggs were officially inspected for these two State institutions after this program was inaugurated in September, 1949. These institutions saved a considerable amount of money as a result of this program. Also, personnel of this Section inspected 2,130 cases of eggs for the Veterans Administration, the U. S. Army, and other private and governmental agencies.

The Poultry Section is responsible for officially sampling or supervising the sampling of dairy and poultry products. During this biennium, 1,396,170 pounds of dried skim milk were officially sampled according to U. S. Department of Agriculture rules and regulations.

The future of the poultry and egg industry in North Carolina is very bright. Four egg grading stations were in the process



Personnel of the Poultry Section train and supervise Federal-State egg graders.

of being set up at the end of this biennium. Numerous processing plants indicated their desire for remodeling and re-equipping existing plants, with the possibility of some additional modern plants being constructed.

DAIRY PRODUCTS

The dairy situation changed considerably during the 1948-50 biennium. Milk production within the state was increased and the amount imported for fluid use was decreased. This change naturally presented different marketing problems, which in turn required additional marketing personnel. Although no expansion was made in the Dairy Section during the biennium, plans were underway at the close of the period to increase the staff.

Informational work, which is an important phase of any dairy marketing program, was continued during the biennium. Direct contacts were made with schools, colleges, and adult groups. There were 203 meetings held which reached approximately 38,500 people. The majority of these meetings were with school groups and lunchroom workers. Most of the school lunchrooms in this State serve milk as a part of the lunch; however, many

Exhibit at the State Fair stressed need for milk.

children are not availing themselves of this opportunity. Constant effort is made to develop this potential market. In addition to these meetings, other groups reached were pre-school clinics, Parent-Teacher Associations, and civic clubs.

Students in six major colleges were contacted with programs and materials. These future teachers, dietitians, home demonstration agents, and homemakers who will be community leaders, seemed eager for program planning information. In view of the fact that they will be influencing the public with their teachings after graduation, it is important that they have sound nutrition information.

Work was continued with health educators, public health nurses and nutritionists who are interested in promoting increased use of dairy products. More than $500 were procured by the Dairy Marketing Specialist to finance the purchase of Dairy Council materials to be used by these trained leaders. This splendid cooperation was invaluable, for it gave a broad coverage to the program which would have been impossible otherwise.

A number of planning meetings were held with members of the dairy industry in Charlotte in an effort to organize a Dairy Council unit. At the close of the biennium, a great deal of interest was expressed in the organization of the Council. Several

local dairy leaders were asked to contact other members of the industry and inform them of the promotional value and need for a Dairy Council. Prospects of the unit being formed by January 1, 1951, looked hopeful at the end of the biennium.

Many joint programs were undertaken by different groups interested in the dairy industry. Each year the dairy exhibit at the State Fair was improved as a cooperative project. June Dairy Month activities increased in importance and scope. Ten thousand window streamers were printed and distributed for use on restaurant windows. Radio "spot" announcements and scripts were made available to the dairy industry and home agents throughout the State. Dairy breakfasts were held in several localities. Several magazines and bulletins carried timely information and recipes. A number of radio programs were given by the Marketing Specialist and others. Transcriptions carrying three one-minute spots were prepared for purchase by individual dairies to be used in their radio advertising.

The Dairy Marketing Specialist also participated in a number of other meetings and served on various committees during the biennium.

COOPERATIVES

Assistance to cooperatives upon request was continued by Specialists of the Division during the 1948-50 biennium. Twenty-nine new cooperatives were set up and their incorporation

This cooperative is owned and operated by 90 farmers.

completed. Representatives helped many of these associations by explaining the State and Federal laws; by aiding in the set-up of the organization including the preparation of the application for charter and by assisting in the formulation of by-laws and marketing agreements. Assistance was also given in management, practice, and financing the cooperatives. The associations that were formed came about as a result of producers seeking to solve a marketing need.

Much assistance was given to the Long Meadow Farms Cooperative, Inc., Durham, North Carolina, as they brought about a merger of two other cooperatives — the Latta Cooperative Dairy, Hillsboro, North Carolina, and the Farmers Dairy Cooperative, Chapel Hill, North Carolina. At the present time there are four plants included in this group, making one large cooperative organization.

All cooperative associations are required under State law to file an annual operating and financial report with the Division. These reports are analyzed, and constructive suggestions for future operations are given by the Marketing Specialists.

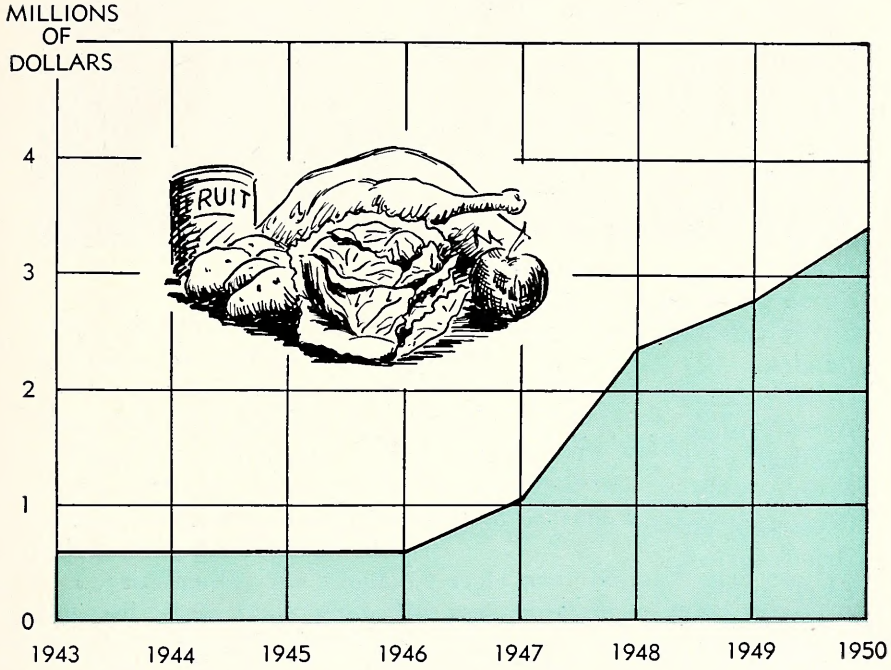
During this biennium we attempted for the first time to assist some of the smaller breeding cooperatives in getting started on making their financial reports. This work enabled us to obtain a much larger than usual percentage of the total reports. Technical assistance was given several of the older organizations in their attempt to modernize their charters and by-laws in keeping with the changes in our Federal and State income tax laws. Assistance was also given on interpretations in general that have been handed down to cooperative organizations.

COMMODITY DISTRIBUTION

The amount and value of donated foods distributed by the Markets Division has continued to increase each year. Surplus foods bought by the United States Department of Agriculture under the Price Support Program, and foods purchased from funds appropriated under the National School Lunch Act, were distributed in greater volume during the 1948-49 biennium than in preceding years. In the past fiscal year alone, almost 700 carloads of food were distributed to schools and charitable institutions.

The warehouse at Camp Butner, operated by the Division, handled over 50 carloads of food in the last 12 months. Ware-

house trucks and a fork lift truck were purchased and used in the Butner warehouse. In addition to the cold storage space, two ordinary storage warehouses with 9,000 square feet of floor space are being used. An increasing amount of field work was done with schools and institutions to encourage them to provide better storage facilities and storage practices to take care of the donated foods.



Wholesale Value of Food Distributed to Schools and Charitable Institutions.

FOODS DISTRIBUTED—SECTION 6 NATIONAL SCHOOL LUNCH ACT

Commodity	1948-1949 (Carloads)	1949-1950 (Carloads)
Canned peaches		39
Process cheese	18	40
Peanut butter	6	13
Canned corn		22
Tomato paste	5	5
Canned tomatoes	19	25
Concentrated orange juice	11	1
Dried milk	7	

SECTION 416

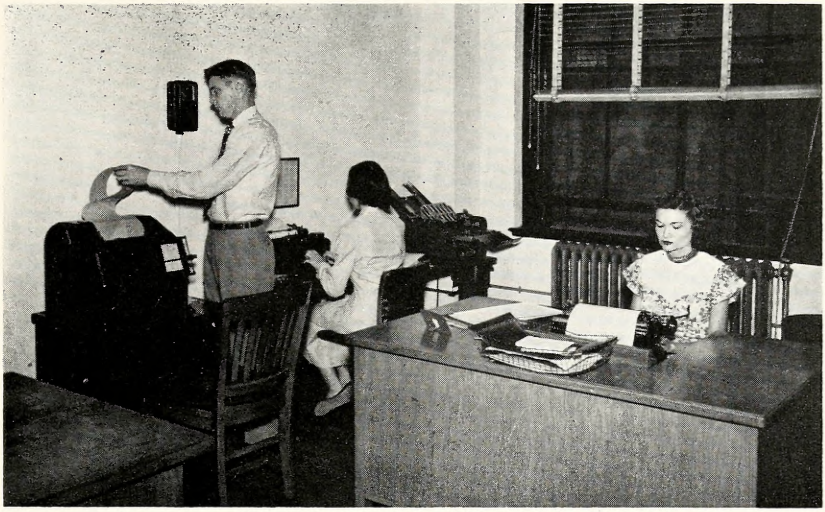
Commodity	1948-1949	1949-1950 (Carloads)
Cheese		4
Irish potatoes		17
Creamery butter		5

FOODS DISTRIBUTED—SECTION 32—"SURPLUS FOODS"

Commodity	1948-1949 (Carloads)	1949-1950 (Carloads)
Fresh apples		145
Dried eggs	10	4
Honey	5	12
Fresh pears		57
Irish potatoes	235	178
Dried milk		9
Fresh Italian prunes		3
Fresh green beans		11
Sweet potatoes	13	2
Raisins	4	1
Dried peaches	5	
Dried prunes	8	
Cabbage	19	12
Frozen turkeys		18
Creamery butter		39
Dried apricots	2	
Dried apples	2	
Canned apple sauce	1	
Storage		
Canned peaches		15
Canned purple plums		4
Canned apricots		1
Cheese		2
Irish potatoes		10
TOTAL NUMBER CARLOADS	370	694

MARKET NEWS

The Market News Service, which is operated under cooperative agreements between the United States and North Carolina Departments of Agriculture, provides accurate daily news cov-



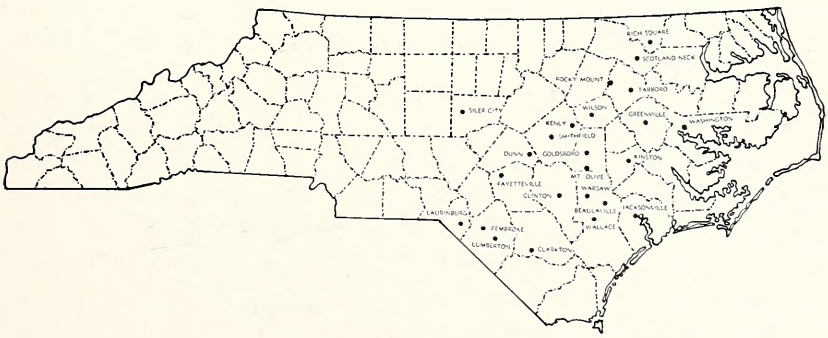
Preparing market news for release.

erage on price, demand, and movement of farm commodities at leading state and terminal markets.

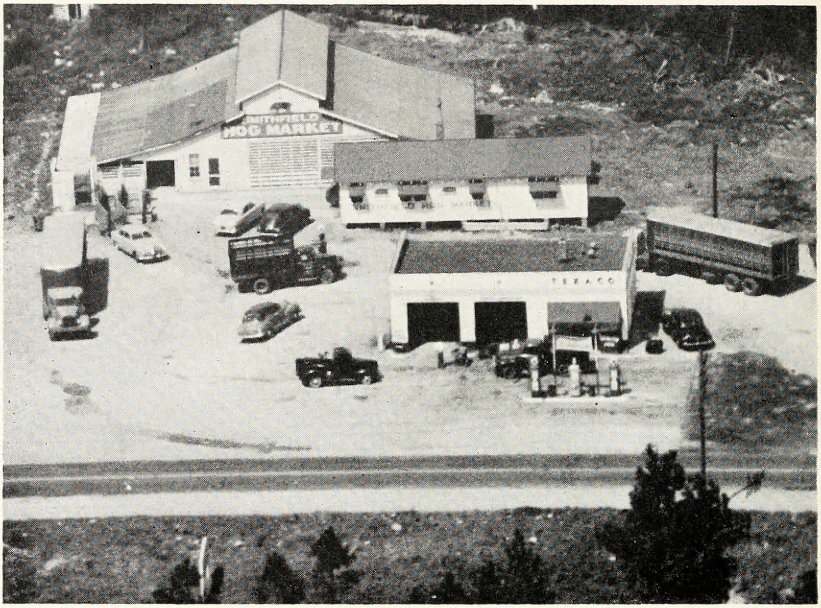
This news is compiled and edited in Raleigh for eastern and piedmont counties, and in Asheville for western counties.

These two offices make daily use of every available means of communication, including radio, newspapers, and wire services to get the market news to interested persons as quickly and accurately as possible.

Approximately 50 telephone calls are received each day by the two offices from producers and handlers of farm products. Much of the information they request is received daily by the two offices over the approximately 8,000 miles of leased wire



Locations of North Carolina's Daily Cash Hog Buying Stations.



Aerial view of Smithfield Hog Market, one of 25 daily cash hog buying stations located in North Carolina.

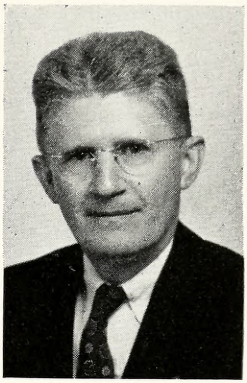
which link the Raleigh and Asheville offices with leading terminal markets throughout the nation.

In addition, six radio scripts, containing latest market price information from state and terminal markets are prepared each day and released to five local radio stations. Two broadcasts were made each week over two local stations by market newsmen. Much of the same information, but in a more detailed form, is released to the public in the seven reports that are prepared daily by the two offices for local newspapers and wire services. Also, more than 4,000 market news bulletins are mailed each week from the two offices to interested persons upon request.

The addition of an assistant in the Market News Office made it possible for the Director to spend more time in the field maintaining and creating closer cooperation and promoting North Carolina agriculture particularly from a marketing standpoint.

STATE MUSEUM

HARRY T. DAVIS
Curator



HARRY T. DAVIS

For the biennium 1948-1950 the Museum Division has made moderate progress in the physical exhibits, and marked progress in the use of the exhibits by visitors and the use of the information services available by mail and other media.

Visitors have reached the 200,000 per year figure for the last year and a half. Since January, 1949, the Museum has served to provide program packages, to some 64 clubs and school groups, with an estimated audience of 2,500 persons. These consist of kodachrome lantern slides and filmstrips on the natural history subjects.

ACCESSIONS

As objects come to the Museum they are recorded in an accessions volume. For the biennium they reached a total of 1,712, some of which included several individual items. These are the foundation for exhibits and information.

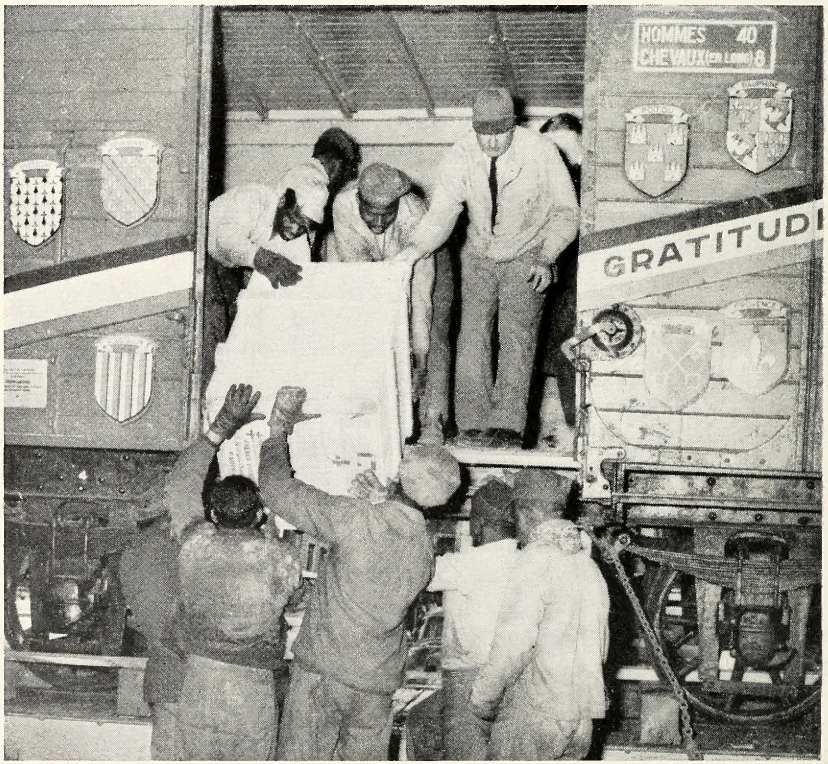
In summary, there were classified accessions as follows: Rocks and minerals, 97; fossils, 45; forestry and botany, 7; insects, 74; other invertebrates, 14; fishes, 32; reptiles and amphibians, 274; birds 106; mammals, 44; archaeology, 194; agriculture and handicraft, 20; library volumes, 52; bulletins and pamphlets, 390; and pictures and lantern slides, 395.

Some significant accessions were Canebrake rattlesnakes from the Currituck Beach and near the Virginia line (range extension); Indian burials with an unusual animal tooth necklace from Freeman P. Hill of Colerain Beach; large Hellbenders (C. alleganiensis) from Jonathans Creek, near Waynesville; an old pea-huller from Rufus Page at Bladen Lakes Forest; records of Ocean Sun Fish at Oregon Inlet and Kures Beach; an old cloth loom from Dr. Thomas Nelson of Raleigh; a collection of mounted animals—including a native Swallow-tailed Kite—from Hargrove Bellamy of Wilmington; the fourth lancet fish (A. ferox) from near Oregon Inlet, by Frank Stick; and the car load of French "Thank You" gifts that came to North Carolina in February, 1949.

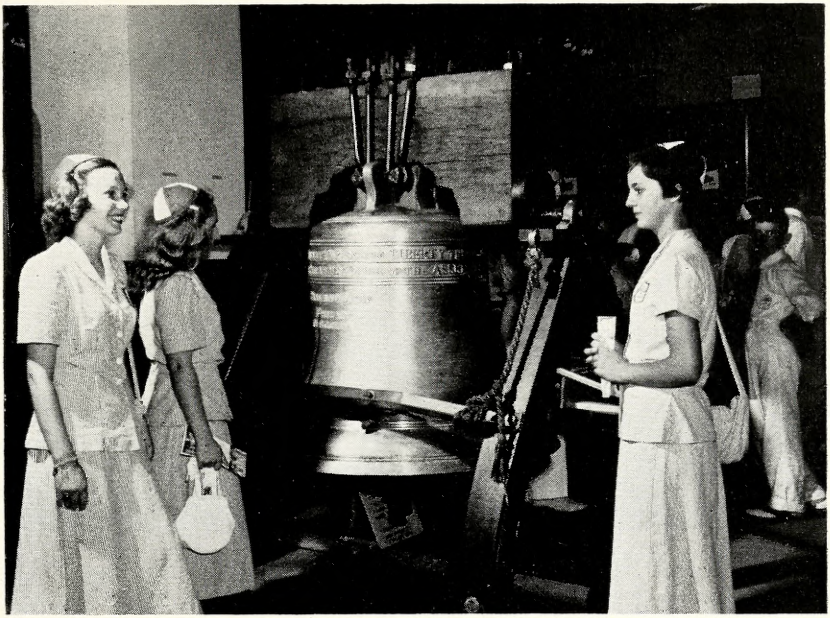
Perhaps the most used accessions have been the kodachromes and film strips. The Raleigh Garden Club gave 150 kodachromes of native birds to the Museum. Mrs. J. L. McLauren of Washington made 40 kodachromes of native flowers and plants, John Trott of New London 50 flower kodachromes, Harry Ellis of Toecane 123 kodachromes of native plants and animals of western North Carolina, and Mr. McKeever of State College 15 kodachromes of live snakes. The investment in these is quite small and they are distinct contributions to the educational work of the Museum.

EXHIBITS

The program for improving old exhibits and making new exhibits has had the constant attention of the technical staff. Work with visitors and mail requests demand increasing attention and it is obvious that more technical help would be well reflected in better exhibits.



French "40 and 8" car being unloaded at museum door.

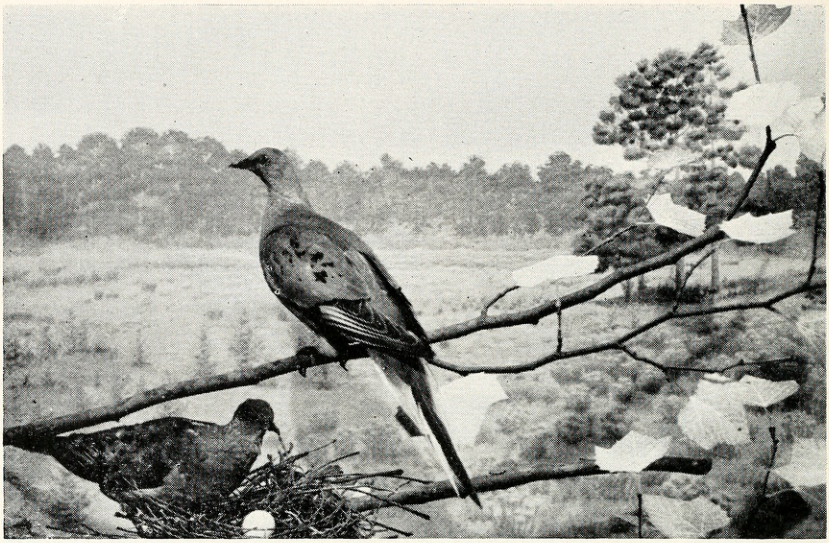


Replica of National Liberty Bell interests 4-H visitors.

Exhibition of the many articles in the French "Thank You" car was undertaken at the request of the State Commission under the Chairmanship of Hon. Itimous Valentine. The box car was brought to the front door and most of the other exhibits in the Front Hall were put aside for unpacking, cataloging, labeling and exhibiting this entire collection. Credit is due Mrs. Cecil Stearns, of Raleigh, a native of France, for donating hours to translating the information for labels. This special exhibit drew many visitors as reflected in the attendance figures for 1949. This interest was still current when these articles were packed and transferred to the Hall of History in August, 1949.

Another similar recent exhibit placed in our spacious Front Hall is a replica of the original Liberty Bell that hangs in Independence Hall at Philadelphia.

A new form of inexpensive habitat case was designed for small habitat groups. A pair of Passenger Pigeons—extinct since 1914—are the most valuable birds in the Museum collection. They were taken from an orthodox mounting and given a painted background that blends with the foreground, nest and eggs. The case is built of plywood on light framing with a



New case designed for pair of Passenger Pigeons.

Artist preparing case for a Cardinal group.

curved background of prestwood. The "window" is sloped and the lighting (inside) is a small fluorescent tube, ventilated. This first unit is 2 ft. deep, 3½ ft. high and 4 ft. wide, and the size can be varied. The case is light and can be easily hung on a wall and the light attached. It is the first of many such small groups that are planned.

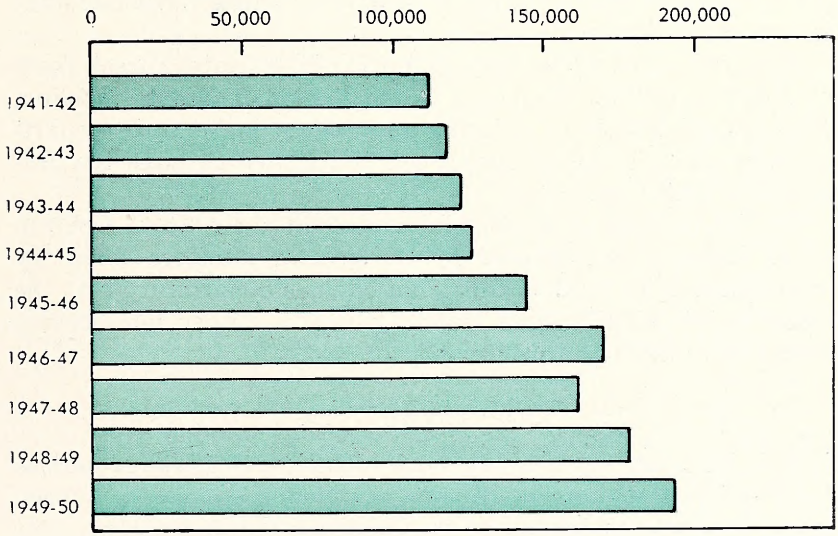
ATTENDANCE

With attendance reaching the 200,000 mark for 1949, the chart indicating attendance for the past nine years is of interest. The 1949 figures reflect the pull of the French "Thank You" exhibits and the session of the Legislature.

For the biennium visitors included some 1,500 school groups, 45 scout groups, 60 church groups, 50 college classes and 45 other groups. The school groups came from all parts of the State and varied from 7 to 131 individuals. The college groups came for special class work. Fourteen hundred 4-H boys and girls were in one afternoon in August, and 1701 visitors were counted in four hours on Sunday afternoon, February 20, 1949.

PUBLICATIONS

This Division makes available to the public books, pamphlets and circulars dealing with our natural history and natural re-



Annual Museum Attendance, 1941-42—1949-50.

sources, because they are not generally available elsewhere. The 5,000 copies of the volume "Birds of North Carolina" are about exhausted. This volume should be revised and issued again. It was printed in 1942 and sales have paid for it.

Four hundred copies of the book "Winter Birds of the N. C. Sandhills" were salvaged during September 1949 and these have been provided at a nominal charge to those who are interested.

The illustrated booklet on Poisonous Snakes continues to be a popular item since 50,000 were printed in 1944. Some 38,000 of these have been sold at a price to cover its cost. The booklet "Reptiles of North Carolina" has met many calls for information.

Information circulars have been prepared on many subjects and some 250,000 have been distributed to visitors, and in response to requests from schools and others, during the biennium.

Some 45,000 printed leaflets telling the story of the Museum and its exhibits have been picked up by visitors. One thousand copies (separates) of the Biennial Report are used for exchange with museums and other institutions, from which exchange we receive valuable research and library publications.

Illustrations and data have been gathered for a volume on Mammals of North Carolina. Other similar volumes are in future plans.

This Division has worked for some years on the fossils and general geology of our Coastal Plain. The American Philosophical Society, of Philadelphia, is now publishing a volume that incorporates the results of this work.

Hundreds of booklet copies of the Tar Heel State, Forest Trees of North Carolina, Food and Game Fishes of North Carolina, History and Points of Interest of Raleigh, and "Your Department of Labor" leaflets, have been distributed through the Museum for other agencies.

With the visiting schools interested in their State Government (civics), as indicated by the greater numbers when the Legislature is in session, this is an obvious opportunity that the Department of Labor finds mutually helpful. Other departments might well consider this.

COOPERATIVE WORK

This Division continues to work closely with State groups as has been indicated above. Excess mounted specimens have been given to the State School for the Blind for tactile teaching. The

Farm and Home Week visitors study poisonous snakes.

black and white metal plates for the book "Winter Birds of the N. C. Sandhills" were given to the University Library. Live animals have been given to small zoos in the State, and the Jamestown Exposition (1907) registers have been given to the Department of Archives and History.

SCIENCE SERVICES

Staff members have continued to taken an active part in the programs of the Carolina Geological Society, the Archaeological Society of North Carolina, the Carolina Bird Club and the N. C. Academy of Sciences. Time has been given to preparing and making talks to schools, clubs, and other groups, concerning the Museum and its subjects. Other state departments frequently seek and receive information from us. There are hundreds of general inquiries from citizens, hundreds of biological specimens, plus mineral and rock specimens, for laboratory analysis and identification. Scores of hunters and fishermen are given advice and assistance to enable them to take care of their trophies.

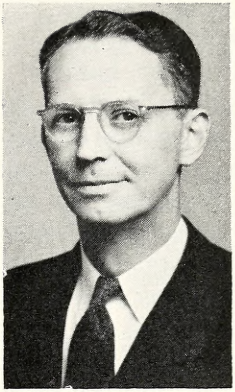
PERSONNEL

Our State is rich in native and domestic plant life. Inasmuch as the botany and plant section of "Natural History" has never been given the attention it should have had in this Museum, an additional member of the staff is requested for this work. Such a person should be well versed in systematic botany, and be skilled in the preparation of botanical exhibits.

This person is needed to work with the organized Garden Clubs in the State in furthering their educational program, to make finished and attractive exhibits of our superior collection of forest tree sections, and to create new exhibits of our varied plant resources.

PUBLICATIONS DIVISION

BLACKBURN W. JOHNSON
Editor



BLACKBURN W. JOHNSON

The Department of Agriculture is charged with a wide variety of responsibilities and functions—some of a routine, regulatory nature and others better described as public service activities. In both types of work, but more especially in its service programs, the Department has found that it is important to keep the public well informed.

This is the reason for the existence of the Publications Division, sometimes called the publicity office. Neither phrase is completely descriptive, for this Division also has other responsibilities. In addition to editing departmental publications and preparing news releases for the press and radio, it serves as a general information bureau for the Department and provides secretarial service for the State Board of Agriculture.

During the past biennium the Division has issued more than 500 news releases and special articles totaling an estimated 140,000 words. It has also prepared for publication 47 issues of the Agricultural Review; six issues of The Bulletin, including Feed, Fertilizer, Seed and Tobacco Reports and other informational material making a total of more than 2,000 printed pages.

Two accomplishments during the past year stand out as worthy of special mention. One is the reduction in the size and cost of the annual Fertilizer Report, and the other is the publication for the first time of all of the Department's regulatory measures in uniform, codified style.

For some years the Fertilizer Report has been increasing in size and printing costs. The issues for 1947-1948 totaled 464 pages, consisting largely of tabulated laboratory reports on analyses of official fertilizer samples. Together with the State Chemist, Dr. E. W. Constable, the Publications Division worked out a system of consolidating and averaging analyses on the same brands and grades. Thus, the Fertilizer Report for 1948-1949 was reduced to 154 pages and a saving of several thousand dollars was effected in printing expenses.

This change in the style of reporting laboratory results of fertilizer analyses was made only after consultation with the fertilizer industry and representatives of farm organizations and the North Carolina Experiment Station. The innovation not only will mean printing economies, but will also pave the way for earlier publication of important fertilizer data.

Carrying out instructions of the Board of Agriculture, the Publications Division cooperated with other Divisions of the Department and with the Attorney General's Office in compiling, codifying and indexing the Rules, Regulations, Definitions and Standards of the North Carolina Department of Agriculture. These were published in ten separate chapters, arranged according to the Divisions responsible for their enforcement. Brought together in a loose-leaf binder, these chapters make a book of 336 pages, which can be kept up to date by the insertion of loose-leaf printed copies of amendments and new regulations as they are adopted and published from time to time.

Individual chapters and complete sets of the Rules and Regulations have been widely circulated, and this is expected to result in more widespread understanding of and better compliance with these provisions. As directed by an act of the 1949 General Assembly (G. S. 143-198.1), the Department has sent complete sets of the Rules and Regulations to the members of the 1949 legislature and to the Clerks of the Superior Courts in the various counties.

The editor wishes to give credit and express his appreciation to Mr. Forrest H. Shuford, II and Mr. Walter F. Brinkley, of the Attorney General's staff, for their work in codifying and indexing the Rules and Regulations; and to Mrs. Pauline DeCosta, of the Publications Division, for her patient labor in the painstaking job of preparing the copy for the printer and rechecking the proofs.

In keeping with the wishes of the Commissioner of Agriculture, the Publications Division has endeavored to follow a policy, both in news releases and in departmental publications, of supplying factual information in a constructive manner. When opinions have been reported, they have been duly attributed to the persons responsible for them.

The Division also has encouraged representatives of the press to see for themselves the workings of the Department and has cooperated wholeheartedly with reporters and editors seeking special information. The results of this "open door" policy have

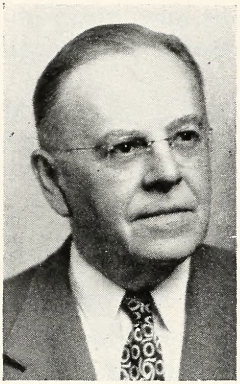
been gratifying. Newspapers and radio stations have given liberal space and time to news about the Department of Agriculture and its various programs.

The Publications Division is now faced with the problem of handling an ever-increasing work load with a staff that has not been increased in many years. The editor and one assistant are responsible for writing and manifolding news releases, editing the Agricultural Review and other publications, keeping minutes for the Board of Agriculture and handling thousands of requests each year for agricultural information. The Division also has two clerical employees who are solely concerned with addressing and mailing 70,000 copies of the Agricultural Review twice a month and maintaining certain other mailing lists.

Another editorial assistant, a combination reporter-photographer, is sorely needed to augment the present editorial staff.

SEED TESTING DIVISION

W. H. DARST
Director



W. H. DARST

The demand for the services of the Seed Testing Laboratory has been growing constantly over the years since it was established in 1910. However, during the last two years the demands on the laboratory have increased sharply, due to the increased interest in hybrid seed corn, improved cereal varieties and the green pastures program. Sufficient funds have not been available for personnel, equipment and facilities to meet this extra-ordinary demand. Last year, 1949-50, the laboratory received for testing 25,727 samples of seed which was a 31 percent increase over the preceding year 1948-49.

The North Carolina seed laboratory is an "Official Laboratory," cooperating with the U. S. Department of Agriculture and operating under official rules for testing seed, in the enforcement of both State and Federal seed laws. Under this title, it is not permitted to use short cuts in the analysis of seeds and we must use approved apparatus and facilities in the laboratory.

The functions of the seed laboratory are:

(1) To test official or inspection seed samples taken by State seed inspectors for compliance with the State and Federal seed laws.
(2) To test for purity and germination all certified lots of seed by the N. C. Crop Improvement Association.
(3) To analyze and test all other seed when requested by residents of the State.

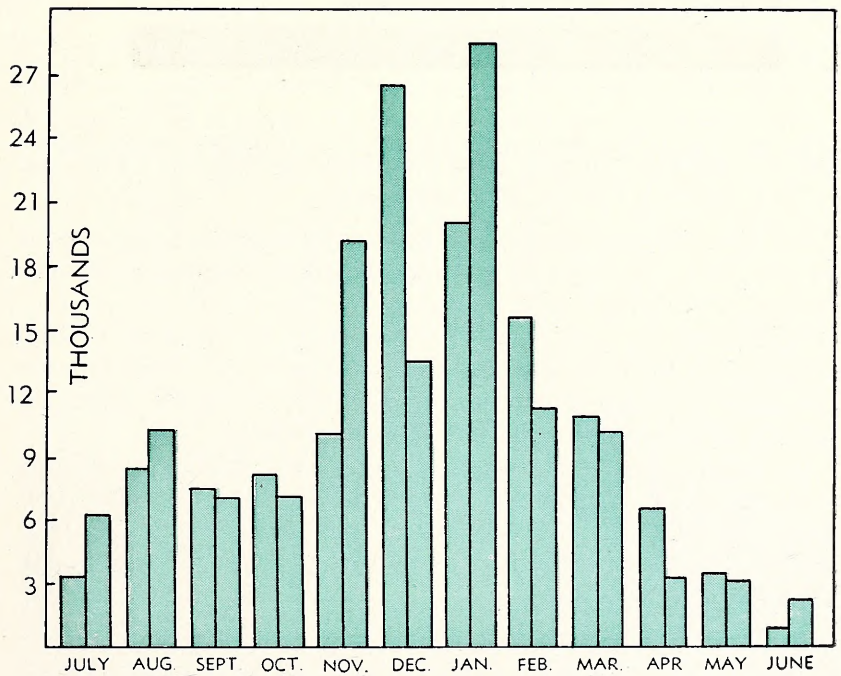
The work-load of the laboratory varies greatly through the year. During two periods last year—August, September and December; January, February and March—the laboratory received more than twice as many samples as could be analyzed and tested by the regular personnel. To handle the work during these critical periods, college students were employed as part-time workers. However, these students had to be trained to analyze seed and their work had to be constantly reviewed

and verified by the experienced personnel of the laboratory. While the over-all capacity of the laboratory was greatly increased by the use of part-time workers, the analytical time of the regular personnel was reduced.

A new seed law was ratified by the General Assembly April 1, 1949. New rules and regulations for the enforcement of the law were adopted by the Board of Agriculture June 22, 1949. The seed law, rules and regulations became effective July 1, 1949.

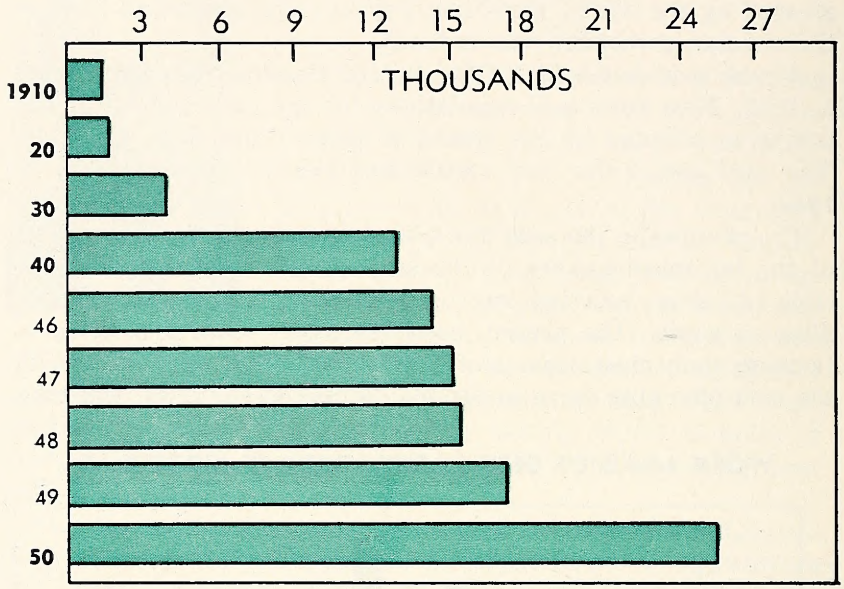
The changes in the seed law were necessary to take advantage of the improved quality of the seed on the market, made possible by better varieties, improved cleaning, processing and handling of seeds. The present seed law offers more protection to farmers than most other state seed laws today. However, with the ever changing farm programs, improved varieties, and han-

WORK LOAD OF SEED LABORATORY IS IRREGULAR



Number of seed samples received for testing by 15-day periods during 1949-50. Rush seasons in the Seed Laboratory come during the late fall and winter months, making it necessary to employ part-time analysts, who first must be trained for this exacting work.

VOLUME OF SEED ANALYSES RAPIDLY INCREASING



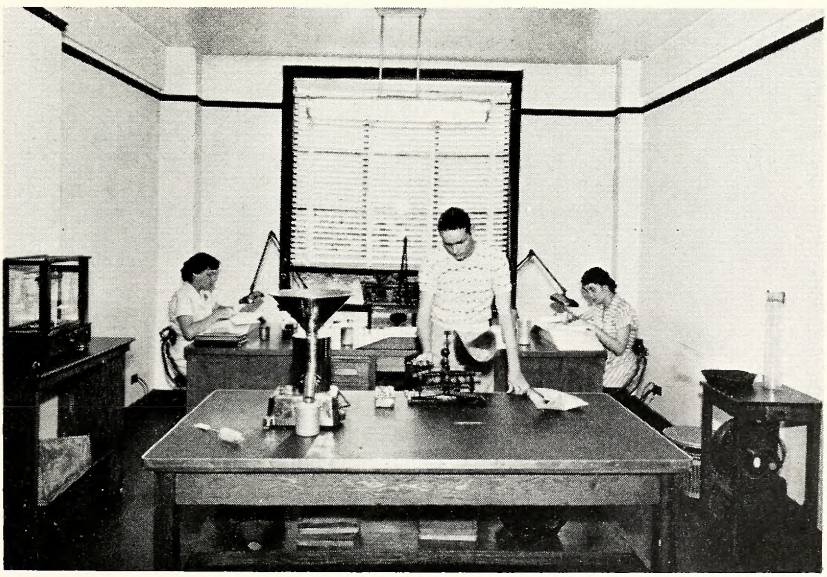
The demand for seed testing has increased rapidly in recent years, as reflected in this chart showing the number of seed samples handled by selected years since 1910. More personnel is needed to carry the heavier load.

dling of seeds, our present law may again need revising soon, if we take full advantage of our opportunities to assist the farmer in securing the best seeds available.

A total of 153 "Stop Sales" were issued by the Seed Testing Division in 1949-50. Seventy-three "Stop Sales" were ordered on North Carolina-grown seed and the remaining 80 were violations of the seed law by out-of-state shippers.

Violations of the State and Federal seed laws were largely violations of the labeling provisions of the laws. On being notified of a "Stop Sale," practically all seed dealers complied with the law by relabeling, using the analysis as found by the North Carolina seed laboratory.

The seed analyst at the left is operating a seed counting plate in preparing samples for germination tests, while the analyst at the right counts by hand the number of seeds which have sprouted from another test sample. The seeds are germinated in special cabinets like those appearing in the background.



Trained specialists analyze seed samples for purity, determining by painstaking process the percentages of weed seed, other crop seed and inert matter present. They also determine the number of noxious weed seeds per pound.

Violations of the North Carolina seed law named in order of frequency of occurrence are as follows:

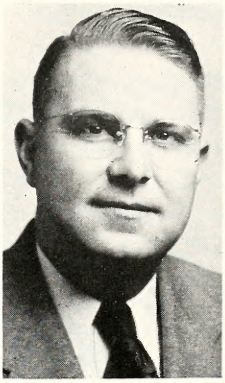
(a) Mislabeled seed as to:

1. Noxious weed content.
2. Germination.
3. Purity.
4. Germination date expired.
5. Variety and mixtures.
6. Incomplete labeling.
7. Total weed seed content.

(b) Seed not tagged or labeled.
(c) Hybrid seed corn not approved.
(d) Vegetable seed, no inspection stamp.
(e) Out-of-state "certified seed" carrying no State seed tags.
(f) Seed tags altered.

SOIL TESTING DIVISION

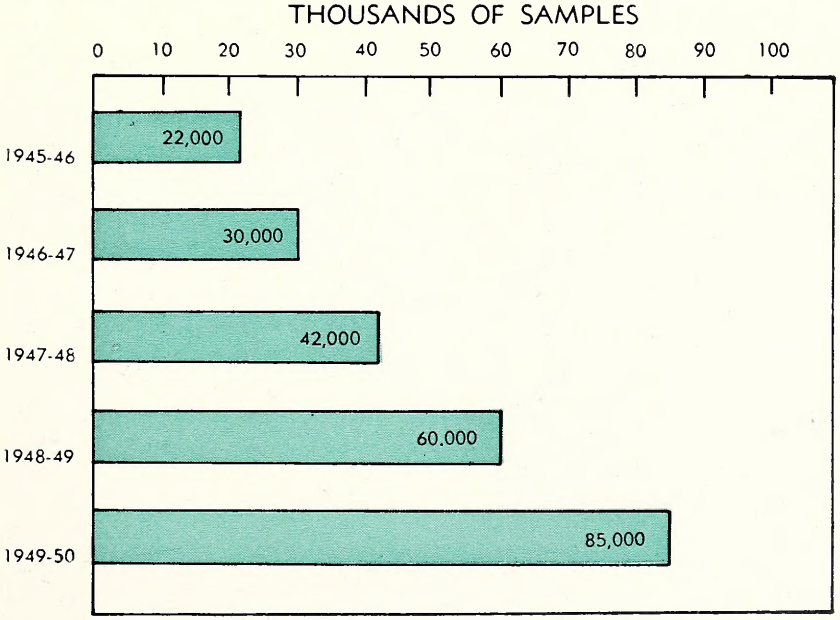
DR. WERNER L. NELSON
Director



DR. WERNER L. NELSON

The number of soil samples being tested is increasing rapidly. The work has doubled in two years, with 42,000 samples in the fiscal year 1947-48 and 85,000 samples in 1949-50. Soils from all parts of North Carolina were tested. The distribution was fairly good although in some counties there was considerably greater interest than in others.

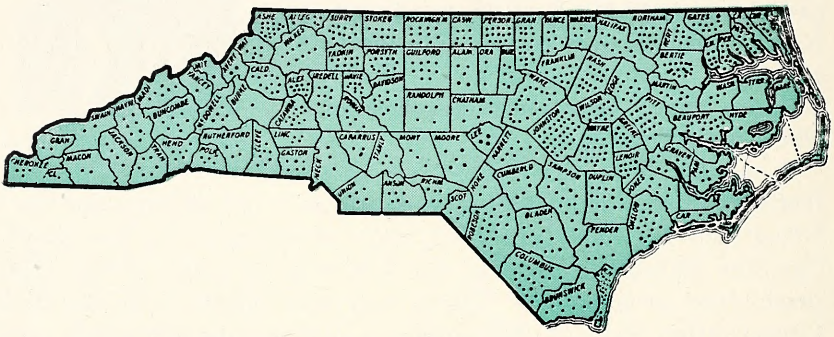
A number of agencies are stressing soil testing in order to make for more efficient use of lime and fertilizer and for more profitable crop production. In the North Carolina Extension Service, the first step in many of the crop production programs is "Have your soil tested." In the Soil Conservation Service soil analyses and recommendations are made a part of the farm plan in many counties. Vocational



Soil Testing Service Has Increased Annually.

teachers are instructing their students how to take soil samples. The PMA is emphasizing soil testing in connection with the liming program, particularly where fields are being relimed. In view of these efforts it is expected that the number of soil samples will continue to increase markedly.

NUMBER OF SOIL SAMPLES BY COUNTIES
JULY 1, 1949 – JUNE 30, 1950



EACH DOT REPRESENTS 50 SAMPLES

VALUE OF SOIL TESTS

All soil samples are tested for pH, organic matter, calcium, magnesium, phosphorus and potash. In addition, the soil type is identified in order to obtain information as to drainage, texture and other physical characteristics.

Liming—Soils vary greatly in acidity as well as in texture and amount of organic matter. These factors affect the amount of lime needed and soil analyses are the best guide in determining the proper amount of lime to apply. North Carolina farmers are using only a fraction as much lime as they should and soil tests are serving to point out the needs.

Fertilization—Soils vary greatly in fertility levels and each field must be considered as a separate problem. Soil analyses help the farmer to choose the proper grade and rate of fertilizer so as to correct low levels of phosphorus or potash in the soil. For example, if a soil is low in potash a 6-6-12 fertilizer would be a more effective fertilizer for corn than 6-8-6.

The farmers of North Carolina used 1,695,000 tons of fertilizer in 1949-50. This was more than any other state used. Soil

tests can be of considerable aid in the effective use of this tremendous tonnage of fertilizer.

Green Pastures Campaign—Soil tests are helping to make the "Green Pastures" campaign successful in North Carolina. It has been shown that proper liming and fertilization before seeding play an important role in profitable pasture production. Limestone or phosphate materials applied as topdressings after seeding are not too effective as they do not move down very fast in the soil. Soil analysis before planting will help to avoid plant food deficiencies on pastures as well as on other farm crops.

CALIBRATION OF TESTS

A sound soil testing program is based on the careful calibration of soil tests with responses to the application of lime and fertilizer. For example, if a soil tests low in phosphorus or potash, it is essential to know how much fertilizer is required to give the greatest returns from the crop to be grown. During the past year, soil samples were taken from many of the field fertility experiments conducted by Experiment Station workers. These samples were analyzed and the results studied carefully in terms of response of the crops to lime and fertilizer on each soil.

Soils being tested for content of phosphorus and potash.

SOIL SAMPLE CONTAINERS

Containers for samples and mailing cartons are provided for farmers. Almost all of the samples received now are in these containers. Use of these containers insures a rather uniform size of sample and facilitates the mechanical handling of samples when they arrive in the laboratory. Full instructions for taking samples and for filling out the information sheets are printed on the containers. Supplies of containers are furnished to County agents, vocational teachers, and Soil Conservation Service personnel or they may be obtained by writing directly to the Soil Testing Division.

EDUCATIONAL WORK

An important part of the soil testing program is educational work among county agricultural leaders and farmers. Emphasis is placed both on the value of soil testing and on the procedure for having soils tested. This is carried on through newspaper and radio releases, talks, group discussions, illustrative material and demonstrations.

One of the most important phases is instruction in proper sampling. To be of value the soil sample must represent the field and constant stress must be placed on the necessity for following instructions for taking samples.

Another important aspect of the educational work is following up recommendations by visiting the farmer. The purpose of this is to determine first, if the recommendations were completely understood, second, if the recommendations were followed, and third, what the results were in terms of crop production. This follow-up is important in developing a thorough soil testing program.

A summary of soil testing data taken in the fiscal year 1947-48 was made by counties, using the I.B.M. procedure. This summary provided information as to the effect of certain cropping practices on soil fertility and gave a general picture of the levels of soil fertility in each county. This report was sent to county agricultural leaders.

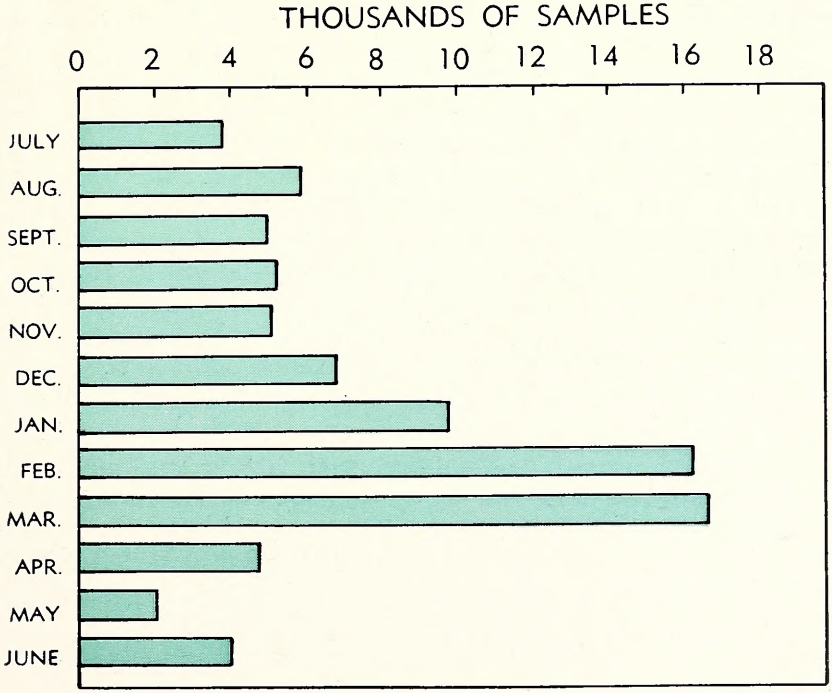
NEEDS

The soil testing program has outgrown its present laboratory. In order to obtain space and facilities needed to handle the in-

creasing numbers of samples efficiently and accurately, it will be necessary to move the soil testing laboratory into the new Agriculture Building Annex. However, before the additional laboratory space can be used, it must be supplied with laboratory desks, sinks, and equipment.

The larger volume of samples demands more supplies and more personnel for preparing and analyzing samples, for making and following up recommendations, and for typing letters. The seasonal pattern of soil testing is shown in the chart below. The greatest rush period is in January, February and March. It is important to return recommendations in time for the farmer to purchase the lime and fertilizer his soil requires. Hence, in order to prevent bottlenecks and provide rapid service to the farmers, a sufficient number of temporary workers must be employed during this period.

A soil testing specialist is needed to concentrate on the educational work in the field. The number of samples has grown to



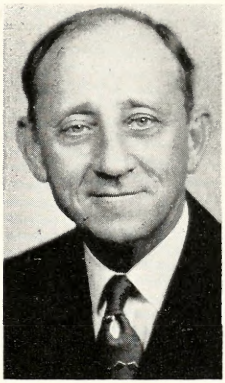
Number of Soil Samples Tested Per Month, 1949-50.

such a volume that it is impossible for the present personnel to handle recommendations and field work along with other duties.

The Soil Testing Division is rendering a valuable service to North Carolina farmers. Soil tests help to take the guesswork out of liming and fertilization and make for greater returns to the farmer. It is essential that facilities be available to meet the increasing demand for soil testing.

STATE FAIR

DR. J. S. DORTON
Manager



DR. J. S. DORTON

During the past biennium the North Carolina State Fair has continued the steady growth in all phases of its activities which began with the first post-war exhibition in 1946. Each year has brought more exhibitors and more visitors than the year before. Cash premiums awarded have risen from $14,499 in 1946 to $28,550 in 1949, and over $38,000 will be offered in 1950.

Total attendance at the 1948 Fair broke all previous records. All exhibit space was filled and many would-be exhibitors had to be turned away. Premiums paid amounted to more than $25,000. Revenue from all sources totaled $196,924.72, with expenditures amounting to $158,146.59, leaving a net profit of $38,778.13 from Fair operations that year.

In 1948, for the first time in its history, the North Carolina State Fair was visited by a President of the United States. On the opening day President Truman spoke to an estimated crowd of 75,000. He was introduced by Governor R. Gregg Cherry, and many State and National officials were present.

Perfect weather throughout the 1949 State Fair week brought more than a quarter million North Carolinians to view the thousands of educational and agricultural exhibits which jammed every available inch of space in main exhibit buildings and overflowed to the outside machinery area. Acres of the latest and finest of every kind and type of labor-saving farm machinery, including hay-drying, tobacco-curing, farm-storage and building equipment, vividly portrayed the best modern methods.

Livestock exhibits filled every pen and stall, and it was necessary to provide tents as stabling facilities for many of them.

Not only was the 1949 Fair an outstanding success from the standpoint of attendance and exhibits, but operations for the year showed a net profit of $65,036.18, although premium payments were the highest offered to that time.

TOTAL ASSETS AND LIABILITIES AS OF DECEMBER 31, 1949

Cash—State Treasurer	$169,388.34
Securities, U. S. Treasury Certificates	75,000.00
Accounts Receivable	8,274.75
TOTAL ASSETS	$252,663.09
Accounts Payable	180.75
Surplus	252,482.34
TOTAL LIABILITIES AND SURPLUS	$252,663.09

In both years of this biennium all of the Fair's facilities were utilized to the extreme limit, but were still inadequate for either exhibitors or visitors, proving the wisdom of the 1949 Legislature in appropriating money for expansion of the plant to keep pace with the growth of the State's agriculture and industry.

Architects, designers and engineers are now bringing to completion plans which have resulted from careful and intensive study of future needs as well as the immediate building program.

A scale model of the 250-acre layout will be on display at the 1950 State Fair. Featured will be the amphitheatre for livestock and other shows or exhibits. This building will have an over-all seating capacity of 10,000, including the arena space, and will seat approximately 7,000 people around the arena. Modern barns and stable facilities near the amphitheatre will accommodate 1,000 head of livestock and their attendants.

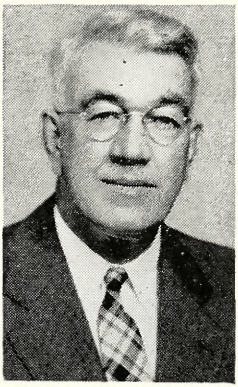
A youth center, with dormitories to accommodate some 200 boys and girls, will house 4-H, FFA, and similar groups, not only during State Fair weeks, but at other times when they have occasion to meet.

The plans and layout also include a building with over 50,000 square feet of floor space to house state and county exhibits, a football stadium with a seating capacity of 100,000, and other buildings. These are not part of the immediate development, and it is contemplated that when they are erected it will be on a self-liquidating basis.

When the entire building program is completed, the North Carolina State Fair will have a plant unsurpassed by any in the South.

DIVISION OF STATISTICS

FRANK PARKER
Chief Statistician



FRANK PARKER

Primarily, North Carolina is recognized as an agricultural state. About 34.5 percent of the State's population lives in farm dwellings, while 73 percent is classified as rural. Approximately 59 percent of our total land area is in farms, with 38 percent of the farm land being under cultivation. Last year the Tar Heel State ranked fourth in the Nation in cash farm income received from the sale of crops; 29th in the sale of livestock and livestock products, and 14th in total cash income from the sale of all farm commodities.

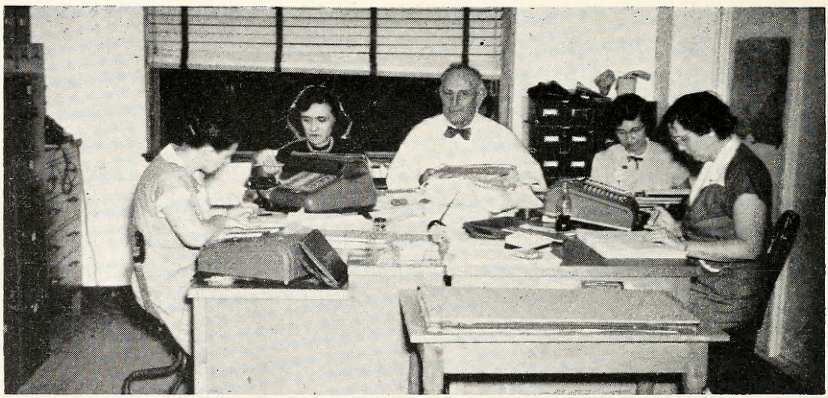
To enable farmers to anticipate and visualize future supply and demand trends for program planning, agricultural crop and livestock estimates are essential. To provide this information, the State's statistical work was authorized when the State Department of Agriculture was inaugurated in 1877 but it was not until 1919 that this Division was actively developed. At present the State and Federal Departments of Agriculture are cooperating in this statistical work. The official organization is known as the Crop Reporting Service and the headquarters are on the second floor of the State's Agriculture Building in Raleigh. The present Chief Statistician organized this office in 1919 and has been in charge since then.

Farmers were the first to realize the value of statistics and more than 40,000 of them are now cooperating in North Carolina by voluntarily supplying information concerning the acreage, condition and yield of crops; prices being received and paid by farmers; numbers of various livestock; and other related subjects. This work is largely done through mailed questionnaires, the results of which are developed in the Raleigh office. To supplement these figures from farmers, the statisticians of the Crop Reporting Service make monthly study trips throughout the State, contacting agricultural workers, feed, seed and fertilizer merchants, and other local people familiar with conditions in their area.

No attempt will be made to list all of the types of statistics which are now being collected and issued by the Division but the

semi-monthly FARM REPORT, the official crop bulletin of the Department of Agriculture, carries current national and state estimates as released by the National Crop Reporting Board. This is an impartial agency which was developed in response to an insistent demand for current information which no other agency has been able to supply. Copies of all crop reports released through the Crop Reporting Service office are mailed directly to a large number of contributors and others interested.

The work of the Statistics Division has followed the federal pattern during the past 50 years but new features have been increasingly added. The Research and Marketing Act last year provided $16,500 for a special matched-fund grain survey in this State. Most of the concentrated effort was placed on corn, for North Carolina is rapidly becoming a surplus rather than a

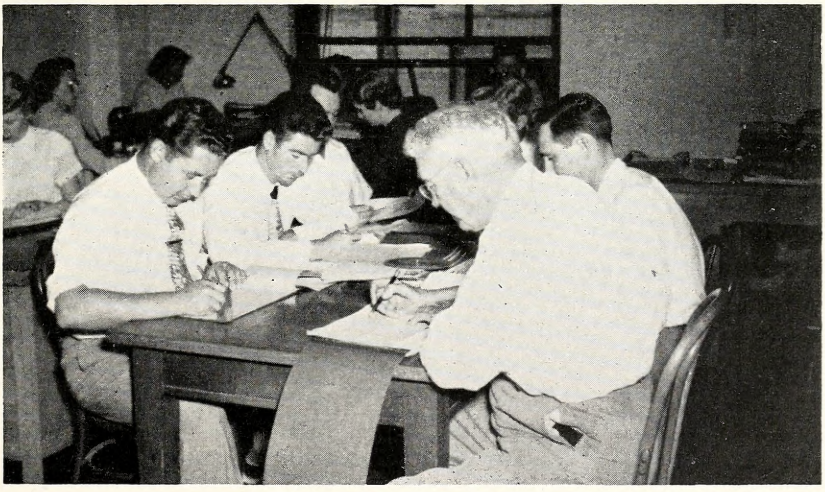


The director and staff of the Annual Farm Census are shown summarizing individual reports of crop acreages and livestock numbers. From these basic reports, township and county estimates are made.

deficit producer of this crop. Problems concerning the distribution, marketing and storage of corn have been greatly intensified. A county survey was made during the harvest season of 1949 and the results are now being tabulated in cooperation with the Statistical Laboratory at State College.

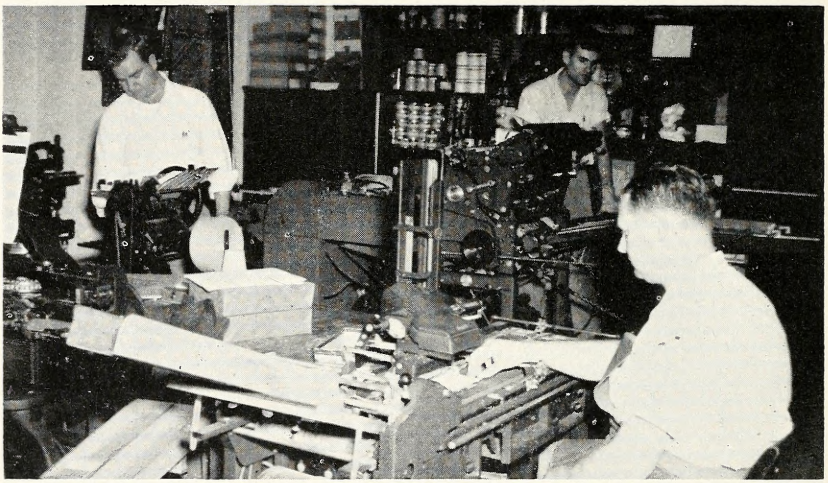
Also, the last General Assembly re-instated the State's Annual Farm Census of basic crop acreages and livestock data. For the first time, township listers for the 1950 survey were encouraged by the State's cash incentive or reward payments to counties making acceptable reports of 90 percent of the total tracts of land in each township. It is anticipated that even better rec-

One of the 40,000 volunteer crop reporters receives his monthly General Crop Schedule, which he will fill out and return to the Crop Reporting Service in Raleigh. Shown with him are two members of the statistical staff discussing current crop conditions.



Crop reports are tabulated by experienced computing clerks, shown in background. Estimates must be released within a specified time to be of current value, and as soon as the data are summarized, qualified statisticians (shown in foreground) study and analyze the summaries. State estimates are recommended to the Crop Reporting Board in Washington for review and official release. Some 450 reports are developed annually.

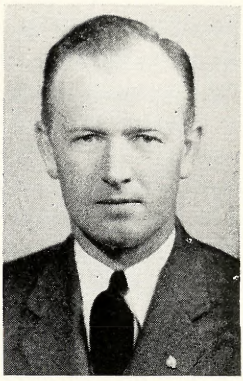
ords will result with the forthcoming January, 1951, enumeration. North Carolina is the only Southern state having such an annual farm inventory. This has meant much to our farmers when their bases for crop acreage allotments were under consideration. The legislature set up $32,000 for incentive pay to deserving township listers at 10 cents per acceptable farm report. The owned taxable tracts reporting totaled 390,497. The 1950 reports showed about 90 percent completeness. Five counties failed to cooperate in the program. Individual county farm census summaries had been developed for 64 counties by September.



The large volume of mail handled by the Crop Reporting Service necessitates the use of time-saving duplicating and mailing machines.

TEST FARMS DIVISION

CECIL D. THOMAS
Director



CECIL D. THOMAS

The function of the Test Farms Division is to supervise the administrative and operational aspects of the seven test farms budgeted in the Department of Agriculture. In addition to this group of farms, a plan became effective on July 1, 1949, whereby the Division was also given the responsibility for administrative and operational matters pertaining to eight research farms budgeted in the Agricultural Experiment Station at N. C. State College. This consolidation was accomplished for the purpose of effecting a more systematic procedure in handling the administration of all outlying research farms on which work is conducted by the Agricultural Experiment Station. Along with the reorganization, an administrative assistant was employed by the Experiment Station to help with the program.

Although the Division is concerned with two groups of farms, this report is limited to a discussion of the test farms. The Department's part in the program on the test farms is to furnish all physical facilities, including land, labor, buildings, materials, and supervisory personnel for carrying out research projects as outlined by the Experiment Station. The United States Department of Agriculture cooperates in the research program on the test farms, largely through the North Carolina Agricultural Experiment Station. In several cases, however, the U. S. D. A. makes a direct contribution in the form of a salary supplement to operating personnel on outlying test farms. In one case, the U. S. D. A. makes a direct contribution of funds for operations. The Southeastern Aromatic Tobacco Company, has for the past few years, furnished funds to further Turkish tobacco research at the Upper Mountain Test Farm.

A summary of annual farm inventories on December 31, 1949, provides data showing the size as well as the nature of operations on all farms. The Department's land holdings on the seven farms amounts to 4,104 acres. Actually only 2,604 acres are considered in normal operation. The difference is accounted for

by a 1,500 acre tract at the Tidewater farm which is not being used, but is being held for possible use in the future. In addition to land owned, there are 133 acres of land at the Piedmont farm owned by the U. S. D. A. Also, during the 1949 crop year a total of 182 acres were rented at the various locations to fill special needs. Experimental field plots occupied 285.8 acres of land, and 264 acres were used for other research of a nature not so exacting in labor and other requirements as the field plots. This "other research" included such things as grazing experiments, fire lane studies, and drainage. General crops on all farms accounted for 493 acres. Crops in this category include those grown to support livestock, and in many cases they were a part of rotations with research projects. Permanent pasture accounted for 511 acres.

The total inventory value of all property on the test farms December 31, 1949, was $1,053,067. Major items making up this total were land, $370,850; buildings and improvements, $476,-014; machinery and equipment, $77,.736; and livestock and poultry, $73,222.

MOUNTAIN TEST FARM—WAYNESVILLE, N. C.

H. R. CLAPP, *Ass't. Director in Charge*

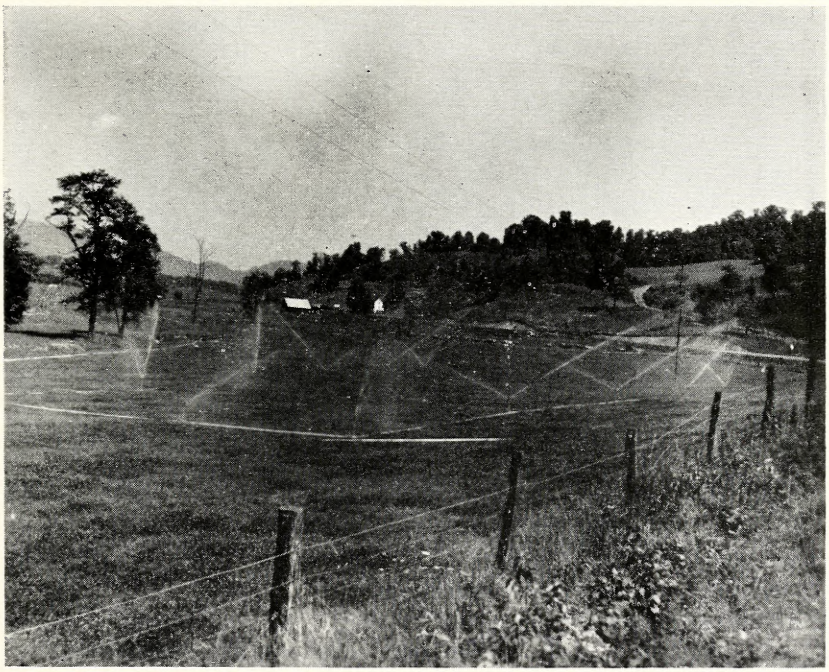
The Mountain Test Farm is located in Haywood County two miles south of Waynesville, North Carolina. The farm, consisting of 388 acres, is considered to be typical of conditions found generally in the mountain area. The original tract was purchased June 1, 1944. In 1946, 34 acres were purchased, on which the Western North Carolina 4-H Club Camp was built. In June, 1950, an additional 72 acres were purchased for $18,-000. Principal soil series are, Halewood, Hiawassee, Congaree, Haysville, Masada, and Clifton. The elevation is 2800 feet, and rainfall averages 45 inches annually.

The classification of the 388 acres is as follows: cropland, 92.5 acres; permanent pasture, 180.0 acres; buildings, roads, etc., 30.0 acres; and woodland, 85.5 acres. Land devoted directly to the different research projects includes: agronomy, 29.8 acres; dairy, 3.0 acres; poultry, 5.0 acres; and horticulture, 1.0 acres.

During the period of this report several new buildings have been added. A new implement shed was constructed to house all equipment and a shop will be added sometime in the future. A new tobacco grading and classing building has been built which

has equipment for controlling heat and humidity. Two new dwellings for farm workers were also constructed. A hay dryer was installed in one of the barns during this period making it possible to dry 25 tons of hay at one time. Since most of the buildings are relatively new, very little maintenance has been required during this period.

To promote the dairy and associated pasture research program, a portable irrigation system was purchased recently and is to be used largely on pastures. As time goes along it will also be used on other crops.



Portable irrigation system in use on pastures.

Pasture improvement work during this period includes clearing land, fencing, fertilizing, and seeding. This work is not complete, as it will take some time to get all the old pastures in good grazing condition. Considerable drainage work has been done to make land suitable for pasture and plot work. Creeks and branches have been cleaned out and straightened.

An effort has been made during the past two years to replace and bring up to date the farm machinery necessary to carry on

the program of work on the farm. This machinery is very important in order to reduce the cost of labor for farm operations. An arrangement was made with one of the farm equipment manufacturers for leasing such equipment. Through this lease plan, a tractor, hay rake, hay loader, field ensilage harvester, and blower have been secured.

At the present time there are seven farm workers living on the farm. They are the farm foreman, dairyman, assistant dairyman, poultryman, and three general farm workers. Additional temporary farm laborers are used as the work requires.

The agencies cooperating in the research program at this test farm are the N. C. Department of Agriculture, N. C. Experiment Station, U. S. Department of Agriculture, and Tennessee Valley Authority. Though the research work undertaken at the farm will be mentioned generally, no attempt will be made to give results or details of the projects.

The Agronomy Department has work in forage and pasture crops, corn, small grain, and burley tobacco. A new program, started during this period by the Agronomy Department in cooperation with the TVA, has to do with the study and control of water on an area basis. Two such areas are located on this farm and three on a nearby farm.

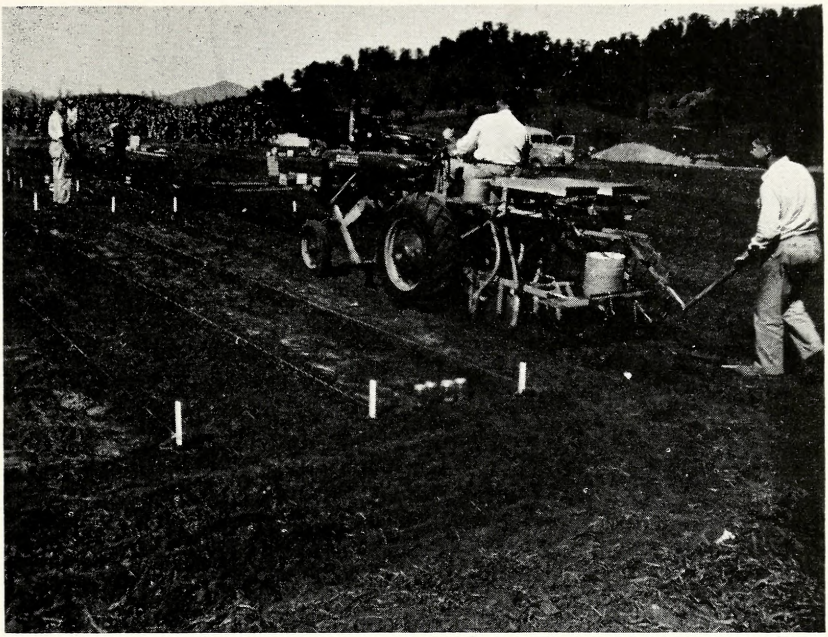
The Poultry Department is carrying on work in the breeding of hybrids, and also in the investigation of out-of-season hatching. A new automatic incubator was recently purchased and installed for use in this work.

The Dairy Department is doing work in breeding, calf feeding trials, cow feeding trials, irrigation of pastures, and the intensified use of cropland. Part of this work is in cooperation with TVA and the Agronomy Department.

The Horticulture Department in the early part of this report period carried on some work with vegetable crops and strawberries. New work in fruits and vegetables is contemplated in the future.

After the research program has been cared for, the remaining facilities are used for general farm crops. The crops grown are suitable for livestock and poultry feeds.

In addition to studying the problems of the area through the research program, an attempt is being made to operate as a demonstration of better farm methods for study by the farmers of this section. In the livestock program males and females are



Laying out plots and applying phosphate materials.

often sold and made available to the farmers, to place good breeding animals throughout the mountain area.

The facilities of this farm are available at all times for use by the people of the area. The following are some of the uses made of the facilities:

1. The Vocational Agriculture Departments of this area hold their annual livestock judging contest at the farm. Our barns and livestock are used for this judging.
2. 4-H Club and FFA members also use the livestock here for training in their judging work.
3. The Extension groups have also used the barns and livestock for training in livestock judging.
4. The Veteran farm training classes from throughout the area visit the farm periodically, and study the general research program of the farm.

Each group of 4-H Club members visits the farm during its week's stay at the Western N. C. Camp.

Enterprise field days are held each year to give farmers an opportunity to study the work being done. During the year the following field days are held: Livestock and Forage Field Day, Poultry Field Day, Tobacco Field Day, and Corn Field Day.

Discussion of tobacco at field meeting.

Throughout the year visits and calls are made by individuals. Professional groups from other areas come to study the work in progress here. Some of the work at this farm has wide interest and has drawn visitors from the entire south. Frequently farmers of this area call for information on special problems. Area and individual county meetings of interest to the farm are attended by the farm personnel, particularly the Assistant Director in Charge. It is very important that this be done in order to keep up with the programs and problems of the different counties. Talks and illustrated lectures on the general aspects of the farm are made to interested groups throughout the area.

PIEDMONT TEST FARM—STATESVILLE, N. C.

J. W. HENDRICKS, *Assistant Director in Charge and Agent, U. S. D. A.*

The Piedmont Test Farm established in 1903, is located in Iredell County, one mile west of Statesville, on Highway No. 90. The elevation is 950 feet above sea level. The climate is mild,

with an average annual temperature of 64 degrees during the past five years, and an average annual rainfall of 47.23.

The farm contains a total of 352 acres, 219 acres being State-owned and 133 Federal-owned. There are several soil types with Cecil clay and sandy loam predominating. At present 158 acres are devoted to general crops, 51 acres are in field crops and other research work, 11 acres in woodland, and 48 acres in permanent pasture.

The buildings on the farm are as follows: office; headhouse; two greenhouses; storage and dry house; shop; cotton storage; cotton gin and seed storage; superintendent's home; foreman's cottage; five tenant houses, each with poultry house, smokehouse, and garage; two barns—one sheep and one cattle; (a horse and mule barn was destroyed by fire in May, 1950, and it is hoped this may be replaced at the beginning of the next fiscal year); a combination granary, fertilizer, and small grain storage; seed cleaning building; two pavilions used for storage of farm implements; and two small buildings used for storage of small tools and other equipment. During the past two years these buildings have been painted inside and out and the roofs repaired and painted.

Farmers study small grain experiments at field meeting.

Realizing that a good pasture is a livestock farmer's greatest asset the farm has endeavored to increase its pasture program and has developed some of the finest pastures to be found in this section. Not only does the farm have an outstanding blue grass, white clover and bermuda sod, but it has for the past few years devoted considerable acreage to Ladino and orchard grass. Plans have been made for additional livestock, and with this in view the present pasture area of 48 acres will be increased to 80 or 100 within the next few months.

During the spring of 1950, a portion of the farm, consisting of 12 acres adjacent to the main highway, was sold to the Empire Knitting Corporation for $20,000.

The farm is rapidly changing to mechanized equipment. However, there is considerable need yet for horsedrawn equipment, particularly in some of the smaller fields and plot work. The farm is fairly well equipped with machinery to carry on the type of work now being conducted.

There are seven families living on the farm who furnish most of the labor for operations. In addition to these, the farm employs a number of part-time workers during the planting and harvesting seasons.

The research program is a cooperative endeavor, in which the North Carolina Agricultural Experiment Station, the United States Department of Agriculture, and the North Carolina Department of Agriculture participate. It is the function of the Piedmont Test Farm to furnish facilities including land, fertilizer and labor for the preparation of seedbed, cultivation, and harvesting.

The research program is under the direction of the North Carolina Agricultural Experiment Station in so far as outlining the projects, supervising planting and harvesting, and compiling results is concerned. The research work consists of projects with livestock and crops.

The livestock work at present consists primarily of grazing small grain (oats and barley) with sheep to determine the effect on yield by seeding earlier than usual, using a heavier application of fertilizer, and a heavier rate of seeding. A breeding flock of 40 ewes is carried, and with lambs and yearlings the total flock numbers 75. Surplus rams and ewes are sold for breeding.

A project is contemplated which will involve grazing beef cattle during the winter months, using a combination of Ladino clover, orchard grass, and fescue.

Research work with crops consist of the following:

1. *Alfalfa and clover*—This study has been to determine the better adapted varieties with reference to yield, winter hardiness, and diseases.

2. *Corn*—Eight acres are being used in testing corn hybrids, using from 150 to 200 hybrid strains, together with dates of planting. Much stress is being placed on yield, vigor, disease resistance and quality in both white and yellow varieties.

3. *Cotton*—The breeding program includes inbreeding, hybrid vigor, spinning and fiber studies, with emphasis being placed on early maturity, length of staple, strength and quality of fiber and disease resistance. Studies are also being made to study oil content and the analyses of the various selections, this being a joint project with the Southern Regional Laboratory at New Orleans.

4. *Flax*—This is in cooperation with the California Central Fiber Corporation of Pisgah Forest. Seed varieties are being grown at different fertilizer levels. The straw is being studied as a raw material for producing paper. This is in cooperation with the Ecusta Paper Corporation at Brevard.

5. *Forestry*—This project, consisting of seven acres, is for the purpose of determining the best variety of pines in this section. The value of forests is being studied in connection with soil building and erosion prevention.

6. *Lespedeza*—Hybrids and selections of annual lespedezas most suitable for use in small grain rotation work are being grown, with emphasis placed on early maturity.

7. *Small Grain Breeding, Variety Testing, and Diseases*—This work is being conducted with wheat, oats, and barley with outstanding results. The farm has had an important part in developing three new varieties of wheat, and five varieties each of barley and oats. Much work is also being done to determine the most ideal seeding dates. Not only

in North Carolina, but throughout the southern states, much loss to small grain, particularly oats and barley, has been attributed to soil-borne diseases. For the above mentioned grains a nursery has been carried on the farm for the purpose of studying mosaic. After studying this disease for the past few years it has been found that certain varieties are highly susceptible while other varieties are only slightly damaged by this disease. So important is this disease that the farm is enlarging its nursery to include some 1800 to 2000 varieties for the purpose of isolating the resistant strains.

8. *Soil Fertility Studies*—This includes the date of application of fertilizer and the rate; and good preparation and cultural practices versus poor practices. This work has been done with wheat, oats and barley.

9. *Soybeans and Sesame*—The objective is to evaluate soybean varieties and selections with emphasis placed on high oil content. The work has been primarily with Roanoke, Volstate, and Ogden. Along with this work a limited number of varieties of sesame are being studied to determine their adaptability with reference to growth and commercial value in oil production.

10. *Sweet Potatoes*—This project was undertaken to determine the value of some of the better strains and varieties with reference to yield, adaptability, and disease resistance.

11. *Weed Control*—Considerable work is being done on the farm to control objectionable weeds in small grain and corn by spraying with 2-4D. This has proven satisfactory in eradicating weeds and has saved labor in cultivating corn.

It is the purpose of the farm to use available land as far as the budget will permit in growing small grains for increasing seed production and in producing feed for livestock.

Aside from the projects with sheep and beef cattle, the farm keeps from two to three brood sows and releases Poland China pigs for breeding purposes.

During this biennium the farm has released for seed purposes to farmers in North Carolina and several other southern states,

Farmers study pasture at field meeting.

587 bushels of soybeans, 1,293 bushels of barley, 1,163 bushels of oats, and 878 bushels of wheat. A considerable part of this seed grain was certified by the North Carolina Crop Improvement Association.

The seed cleaning equipment is used to a considerable extent by farmers in cleaning small grain used for seeding purposes, particularly where the volume is not too great and where the amount of seed to be cleaned does not warrant the use of large commercial cleaners.

During the spring of 1950 the farm cooperated with the Markets Division of the North Carolina Department of Agriculture in assembling and distributing 850 sheep to the farmers of North Carolina.

The farm's facilities are available to the public at all times for group meetings, educational tours, and picnics. Annual field meetings include the study of small grains, corn, cotton, pastures and legumes. The attendance at the special meetings during the fiscal year 1949-50 was 3,735.

Twenty-two special groups such as county groups, veterans classes, vocational agriculture classes, 4-H clubs, FFA, high school and college classes, fertilizer groups, with a total num-

ber of 1,012, visited the farm during the same period. Various other individuals visiting the farm number approximately 2,000 annually. During the past biennium the farm has been honored in having as special guests agricultural representatives from several foreign countries, namely, China, Peru, Brazil, Ecuador, Germany, France, Belgium, Norway, Sweden, and Denmark.

Visits and meetings with farmers and other agricultural groups off the farm numbered 156 during the fiscal year 1949-50.

COASTAL PLAIN TEST FARM—WILLARD, N. C.

CHARLES T. DEARING, *Ass't. Director in Charge*

This farm is located in the northern part of Pender County one mile north of Willard, and three miles south of Wallace. The farm has an elevation of 51 feet above sea level and was established in 1905 on a site having Norfolk sandy loam as a general soil type. At present the farm consists of 411.5 acres. The area was developed by clearing the land of heavy pine timber and is good soil, reasonably well drained.

Of the 411.5 acres, approximately 187 are devoted to crops; 41 to permanent pasture, 51 to rotation pasture, the balance being woodland or used for roads, lanes, and building sites, with only 10 acres listed as idle land. Of the crop land, approximately one-half is devoted to research plots of varing types, the remainder being used for the production of hay, corn, soybeans, and small grain to feed the dairy herd, poultry, hogs, and work-stock of the farm. The 51 acres of rotation pasture and 40 acres of permanent pasture might be considered as large research plot areas. While these areas serve as pasturage for our dairy herd, they constitute plots for the cooperative dairy-forage crop research underway.

At the beginning of the biennium there were 48 buildings on the farm, ranging from the large dairy barns to small poultry buildings and including eight dwellings for station personnel, ranging from the superintendent's dwelling to laborers' houses. These buildings had a total inventory valuation of $126,375 on December 31, 1949.

During the biennium a number of new buildings have been constructed and existing buildings have been improved where needed. Other improvements in the nature of land clearing and

drainage projects have been completed. In the first year of the biennium three new buildings and 10 range houses were added to the poultry project under a $20,000 appropriation, and in the second year a main building for the poultry plant costing $6,000 was completed. A $6,000 concrete block machinery implement shed was also completed and an addition was made to the bull barn and lots to permit carrying four bulls instead of two.

Perhaps the major improvement to be reported during this biennium was the work of developing a new 24-acre permanent pasture from heavily wooded land near the dairy barns. The timber was cut and a mill was set up under a contract with a lumber company. Proceeds from the sale of lumber, pulp wood, dog wood spindle logs, and tobacco barn fire wood were used for completely clearing the land of stumps and brush. Some drainage work was done in connection with this project and while it will be a year or two before the project is completed, it has progressed to the point where the area was planted to soybeans in the summer of 1950, the soybeans to be followed in the fall of 1950 by a lime and fertilizer treatment and the seeding of Ladino clover and fescue grass for permanent

Experimental grazing pastures, new pasture area in background.

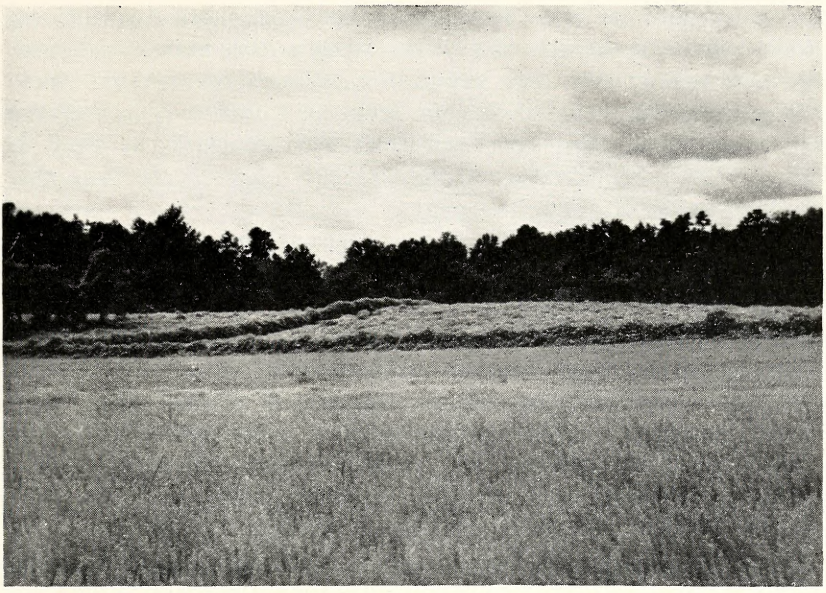
pastures on approximately 20 acres of the area. Two low portions of the area still need further development, and the large stumps bulldozed into furrows need to be burned and worked out of existence. This should take about three years time.

The program of mechanizing the farm has been carried out during the biennium. The number of work animals has been reduced to less than one-third by selling off the older and less needed animals, leaving two teams and a large draft horse. The number of tractors has been increased from one to four, ranging from a small cub tractor to a large tractor for plowing and other heavy work. One tractor has been especially equipped for planting and cultivating, another for mowing and sawing. Facilities for making ensilage in the dairy have been improved by the purchase of a corn harvester and field chopper, and acquiring a group of three farm utility wagons for carrying the chopped corn from the field to the silos. This has greatly reduced the amount of hand labor involved in this operation. The following new equipment has been acquired: a pickup truck, a blower for lifting ensilage into the silo, a milk cooler and other milk house equipment, and tillage equipment. Some of this equipment has been procured under a lease plan with one of the large dealers in farm implements. This plan provides for an annual lease and replacement of implements at the end of two years.

During the first year of the biennium a program of painting was carried out which involved the painting of all metal roofs of buildings and the outside of all frame buildings. Repairs have been made to buildings as required to keep them in good condition, and the interior of several dwellings have also been renovated by inside painting.

At the end of the biennium our staff consisted of the superintendent, foreman, poultryman, dairyman and secretary. In addition to these, there are 13 regular workers in the dairy, poultry plant, and general work, and from two to 20 temporary workers are employed from time to time to take care of the rush of work during the strawberry and grape harvesting seasons and for hoe work during the rainy summer season.

The farm activities involve carrying out the research program, conducting general farming operations and public relations activities such as the holding of field days, giving instruction to groups of veterans, and dealing with farmers and other visitors of many types. The research program is conducted by



Lespedeza, sericea and kudzu also provide forage for the dairy herd.

the N. C. Agricultural Experiment Station with the U. S. Department of Agriculture cooperating. The four principal lines of research are : (1) dairy and forage crop, (2) poultry, (3) small fruit, and (4) agronomy.

The dairy and forage crop research is a cooperative project between the N. C. Department of Agriculture, the N. C. Agricultural Experiment Station, and the U. S. Department of Agriculture, Bureau of Dairy Industry. This project relates to studies in pasture production and maintenance with a view to determining the best rotation and management to provide ample, constant, year round pasturage for the herd.

The other phase of the dairy research is tied in with similar research in other parts of the country and relates to breeding for higher production. Under this program the production and quality of animals has steadily improved and the value of the use of proven sires has been steadily demonstrated. Our herd production has been increased both as to quantity of milk and amount of butterfat in same.

Poultry research is classed under two general projects. One is a breeding project relating to the production of a superior strain of Rhode Island Red chickens. The objective is to produce

a strain with greater hatchability of eggs and livability of chicks, early feathering of broilers, early sexual maturity, larger egg size and greater egg production. Carrying out this work, 700 pullets were used each year from 12 families, and over the years egg production has been increased from an average of around 100 to an average of around 200 eggs. Some hens now produce up to 300 eggs per year.

The other project relates to the performance and egg quality of poultry hatched at various seasons of the year. The objectives are to determine if hatching chicks in seasons of the year other than the natural season (spring) is economically advisable under the climatic conditions prevailing; to study the market quality of eggs produced during the hot summer months by pullets hatched in the various groups; and to investigate the usefulness of egg cellars for summer storage in Eastern North Carolina. This is a new project which is incident to the establishment of the new research poultry plant.

Strawberry research work as a horticultural project has been continued during the biennium and new selections have been made and tested. Selections previously made and introduced have continued to demonstrate their worth and serve as the principal commercial varieties grown in the southeastern part of the State. The use of these varieties generally has been spreading through the country.

The research work with brambles has been brought to conclusion at this farm and has been transferred to another location. The grape work has been continued, but has been somewhat reduced by the removal of breeding operations to another location.

Agronomy work at this farm has consisted principally of testing corn hybrids produced in the breeding work of the State Experiment Station and soybeans originating from the State's soybean breeding operations; also the testing of all new productions of other states.

Dairy and poultry projects call for a considerable amount of general farming work in the production of hay, feed and ensilage. We are endeavoring to produce the needs of the dairy for hay and ensilage and of the poultry plant for scratch grain, which involves the growing of corn, wheat, and oats. It would be desirable if the station could produce at least part of its concentrate feed, but in order to do this more acreage will be required than is at present available. We have, however,

reached the stage where we are providing all of our needs for roughage and scratch grain, and in addition we are carrying a small hog project through which the surpluses and wastes of the station are marketed. And we are doing a certain amount of work in producing other needs of the farm, such as sweet potatoes for sale and a garden to provide vegetables for the boarding house maintained for research workers and other guests of the farm.

The farm affords considerable service to the general public in addition to carrying on its research and demonstration work. For example, bull calves from the herd are sold generally through the ten southeastern counties of the State at a price, based upon the age of the calf and the production of the dam, on a level where the farmer and dairyman can afford to buy these high grade calves from our fine herd. Fine Jersey bull calves, through this plan, have been distributed all over the area being served, and follow-up investigations show that they are serving a most useful purpose in building up the quality and production of dairy stock generally throughout the territory.

Our dairy department also gives neighborly help to dairymen and cow owners in the matter of caring for sick animals, but we refrain from interfering with practice of veterinarians. Our dairy also holds an annual sale, disposing of a dozen or more mature cows which are ideal for family cows, for commercial dairies or for breeding purposes. These cows are sold to make room for young stock coming on, and this process is necessary in carrying on the development of the breeding project which requires us to get records on three lactation periods of each heifer coming into the herd.

The farm also renders service by serving as a source of plant material, though we make no effort to compete with commercial nurseries. We do, however, sell plants for the purpose of introducing new varieties and helping growers to get material which they cannot readily obtain elsewhere. Muscadine grape, strawberry, dewberry, and sweet potato plants have been distributed as service to the public and at reasonable prices.

The farm also carries on a regular correspondence, giving information in response to inquiries from farmers and others about agricultural matters. Farm personnel participates in various types of agricultural and public meetings, and for the

benefit of individual callers the farm provides information verbally, by demonstration and through meetings of various kinds.

The poultry plant also is serving the public by providing hatching eggs, baby chicks and cockerels, and occasionally pullets as they may be needed by poultrymen of the section for starting and augmenting their flocks. The farm is playing its part in the cooperative development of a major poultry industry in the southeastern part of the State.

The facilities of the farm are sometimes used by outside agencies for holding meetings and, if we succeed in getting a pavilion auditorium, more activities of this type will be developed.

The farm has developed to the point where it is recognized as a central location for agricultural information and is being called on more and more by the farming interests in the section to give first hand, immediate information and assistance. When this cannot be given directly, the farm serves as a needed liaison in connecting the applicant with the particular specialist or division of the agricultural service which can give him the assistance he needs. We also attempt to bring the specialists and experts together with the farmers and other interested people of the section by holding each year a series of field days, each devoted to a particular subject and intended for those who are especially interested in that subject. For example, in both summers of the biennium we have held a Dairy Day, a Poultry Day, and an Agronomy Day, with average attendance of nearly 400. It is planned to devote days to other special features in other years.

The farm has done a great deal of an educational nature in connection with veterans' and other agricultural classes and 4-H clubs. We have given special consideration to classes of vocational agricultural students and veterans' classes in agriculture. These groups generally range from 50 to 100 men who are planning to take up agriculture as their life work. Some of these classes remain at the farm from about 9:00 in the morning until 4:00 in the afternoon, others spend a half day with us and confine their attention to only a part of the farm's activities.

In addition to these special meetings and agricultural classes, which are instructed by the Superintendent, the Dairyman, the Poultryman, and the Farm Foreman while here, the farm has

many visits from farmers and others interested in securing agricultural information. They come singly, in pairs and in small groups. All are given priority attention, but it should be emphasized that they draw heavily upon the time of the Superintendent and specialists and complicate the handling of their other activities. Occasionally the Superintendent attends farm meetings as circumstances permit, especially field meetings at other farms of the service.

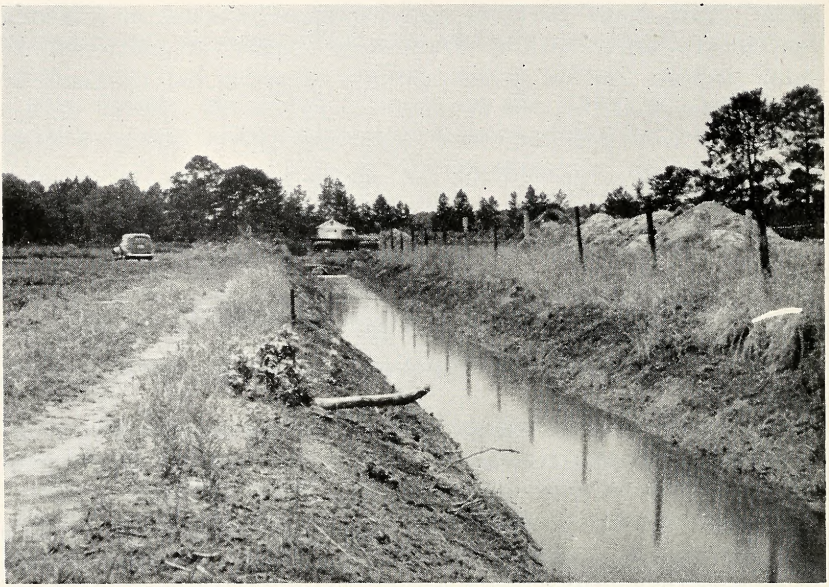
TIDEWATER TEST FARM—PLYMOUTH, N. C.

J. L. REA, JR., *Ass't. Director in Charge*

The Tidewater Test Farm, located five miles east of Plymouth on highway No. 64, was established in 1943 and includes a total of 1,995 acres of land. There are 495 acres included in operations and a tract of 1500 acres is rough, undeveloped and unused land partly covered with trees. Of the 495 acres, 223 are classed as cropland; there are 62 acres of improved permanent pasture; 30 acres are used for rotation grazing; and 160 acres of woodland are used for forest grazing studies. A small acreage has a fair growth of marketable timber, and additional land that will not be cropped is being permitted to grow seedling trees which will make the land even more valuable. Of the total area in the main operating unit, approximately 175 acres are now being used for field plots and for pasture experimental work.

Many improvements have been made to the physical plant during the past biennium and particularly during the past fiscal year. Provisions were made by the last legislature for bringing the building and improvement program a step nearer completion. As a result, during the 1949-50 fiscal year, buildings were added as follows: a 14′ x 35′ concrete stave silo, a 61′ x 96′ beef cattle barn, a 32′ x 32′ fertilizer storage building, and a grain storage building, 36′ x 46′. A 40′ x 88′ cement block wing and a shop were added to the implement shed, and five experimental corn cribs were built.

In addition to buildings, clearing and draining land received considerable attention. During the fall of 1949, three and one-half miles of canals on the back part of the farm were opened to improve drainage of both pasture and cropland. Culverts were put in at appropriate places to provide entrance to the fields for tractors and other machinery. A total of 25 acres were



Drainage is an important phase of farm development.

cleared and seeded to pasture during the fall months of 1949. Practically all the newly cleared land on the farm has been seeded to permanent pasture to furnish grazing for the beef herd.

The Tidewater Test Farm is only 15 feet above sea level, and in some cases swampy land on and near the farm makes drainage a very important process. Rainfall for the past five years has averaged 63.44 inches annually, which is somewhat above normal for that part of the state. In April, May, and June of 1948, the total rainfall was 17.64 inches, while for the same period in 1949 the total was 25.34 inches.

Mechanized equipment has largely replaced all horse-drawn implements. Farm machinery consists of four tractors, automatic hay baler, tractor-operated potato digger, planters, disks, tractor cultivators, grain drill, corn picker, side delivery hay rake and tiller, bottom plows, power weeders, rotary hoe, combine, corn sheller, mowers, hay drier, front end tractor loader and numerous other small tools.

There are six persons employed on a permanent basis and two temporary employees. Six families are now living on the farm.

The research program is designed to cover the major agricultural problems of the Tidewater area of the State. The main lines of research are: drainage, forage crops, adaptable corn hybrids, small grain varieties, soybean varieties, Irish potato varieties, potato diseases, soybean diseases, crop rotations, fertility studies with corn and soybeans, pasture studies, nutrition studies with sheep, carrying capacity of pastures with beef cattle, range studies of native forage for beef cattle, fire land construction and maintenance, and muscadine grape varieties and cultural studies.

The research work is developed and supervised by the Agricultural Experiment Station at State College. Cooperating in research are the United States Department of Agriculture, and the Nutrition Laboratory at Cornell University. The work on the farm is almost entirely experimental, except that feed crops are being grown on the land that has been used for experimental purposes and is now being uniformly cropped so as to again be suitable for future research work. Certain land has been reserved for some particular future use. This land, too, is being used to support the livestock program.

Pasture, beef cattle and fencing have been improved.

All feed that can be grown is now being produced in order to keep the cost of the experimental program at as low a figure as possible. As much corn, hay, silage, and small grain as possible is being grown on available land.

When land resources permit some certified seeds are grown. These seeds are cleaned at the farm and sold to the farmers. Surplus livestock suitable for breeding purposes has been sold to farmers with a view to helping to build up the livestock industry in this section. Assistance has been given farmers in cleaning seeds, providing information as to varieties, fertilization, and other current problems.

Field meetings on certain phases of the experimental work have been held at appropriate times over the past two years. The May meeting has been on the subject of Irish potatoes and pastures and the summer meetings on hybrid corn and soybeans. Other phases of the work will be covered in the future. Attendance at the field meetings for the past two years has ranged from 250 to 450 people at each meeting.

During the biennium, veterans' classes have visited the farm at the rate of one or more classes each week during the crop growing season. These classes have averaged from 25 to 75 men. The entire experimental program has been shown these classes, the results of the experiments given and the program of the work explained.

The Future Farmers of America's livestock judging for this district has been held at the test farm for the past several years. Individual County Agents, VoAg teachers, Experiment Station workers, including a number of individuals from Cuba, Brazil, Holland and other countries, have visited the farm. The Tidewater Test Farm is a source of agricultural information for visitors to the farm and for agricultural meetings that are held in this section. The farm cooperates with the other agricultural agencies, such as the County Agent, Soil Conservation Service, Vocational Agricultural Teachers, and veterans' teachers in every way possible.

Considerable time has been given in the past few years to individuals and groups that come in with an idea of buying farms in the Tidewater area. A majority of them are interested in this section from the standpoint of the production of livestock on range land, particularly beef cattle.

Many inquiries are received by mail on various phases of agriculture from individuals. These inquiries are either answered

from information gathered on the farm or are forwarded to the proper individuals who have the information.

TOBACCO TEST FARM—OXFORD, N. C.

J. M. CARR, *Ass't. Director in Charge and Agronomist U.S.D.A.*

The Tobacco Test Farm is located in Granville County about one mile west of the town of Oxford, which has an elevation of approximately 500 feet above sea level. It was established in 1912 on an original tract of 250 acres of land. Soils on this tract consist mainly of the Enon and Colfax series varying from coarse to fine sandy loams. Much of the original land area is low and poorly drained making it undesirable for row crops.

In 1941 a nearby tract, containing a high percentage of tillable land of the Durham and Colfax soil types, was purchased making a total of 330 acres in the farm proper. This area is used as follows: permanent pasture, 20.0 acres; field crops—corn, hay, grain—83.0 acres; research plots, 42.1 acres; woodland, 132.9 acres; idle land, 27.0 acres; and building lots, gardens, roads, etc., 25.0 acres. In addition to the 330 acres owned by the State, a tract of five acres leased by North Carolina State College five miles south of Oxford is operated with farm personnel and equipment. This tract is used for breeding tobacco varieties resistant to black shank.

Annual precipitation for the year July, 1948, to June 30, 1949, amounted to 50.12 inches, and 37.20 inches for the same period 1949-1950. The mean annual precipitation for the 29-year period 1921-1950 amounted to 44.29 inches.

Since the last biennial report considerable improvement has been made in the physical plant. During the 1948-49 fiscal year a progressive type curing barn was constructed which brought the total curing barn space to 16 units, each unit being 16 x 16 feet. During the 1949-50 fiscal year, a 40 x 60 foot tobacco packhouse, a 24 x 36 foot fertilizer storage house, and a four-room laborer's cottage were constructed. These buildings greatly increased the efficiency of operation.

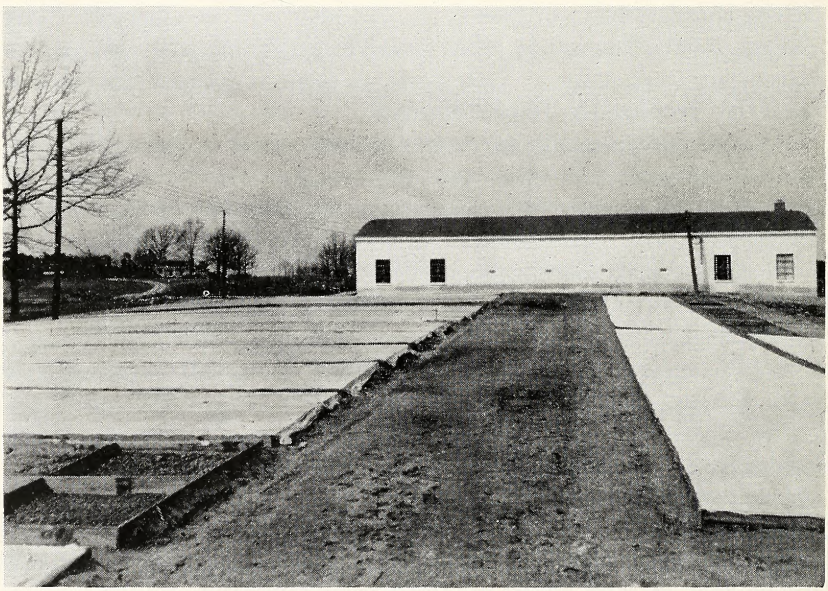
In addition to the new buildings, all dwellings and barns were repaired and a majority of them were painted. About 6,000 linear feet of new fence was put up to replace old fences and to take in five acres of improved pasture which were seeded to

Ladino clover and orchard grass in the fall of 1949. A farm pond for irrigation, more than one acre in size, was constructed in the spring of 1950.

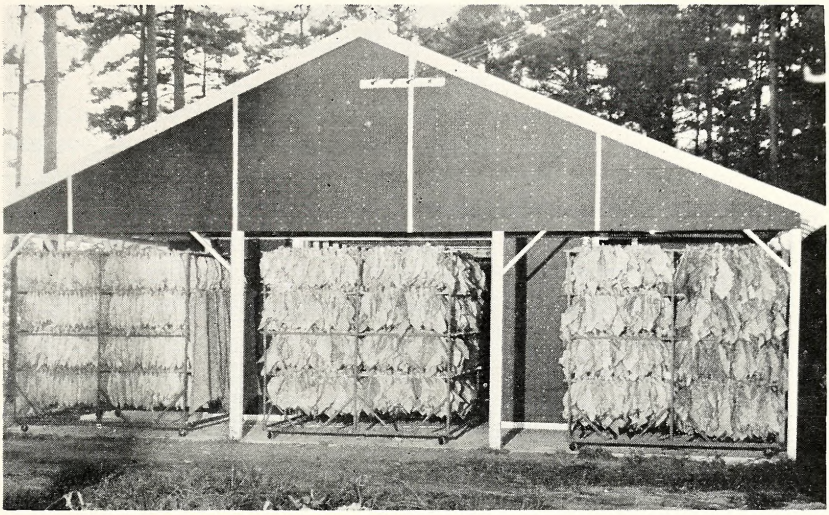
The Tobacco Test Farm is operated largely by tractor power, having on lease three tractors together with the necessary land-preparation, cultivating and small-grain-harvesting equipment. Five mules are required for sledding tobacco from the fields and for cultivation of low wet acres on which tractors cannot be used. A permanent labor force of seven men and two foremen is kept throughout the year. During the harvest season, temporary help of from 25 to 30 people are recruited from families living on the farm and high school boys living in Oxford.

It is the function of the farm to furnish facilities and labor for the research program and to coordinate the work of the several research agencies operating at this farm.

The N. C. Experiment Station, State College, Raleigh, and the Division of Tobacco, Medicinal and Special Crops of the Bureau of Plant Industry, Soils and Agricultural Engineering, United States Department of Agriculture, are cooperating in the agronomy and pathology programs. These programs are de-



Tobacco plant beds, with agricultural engineering laboratory in background.



Tobacco barn used for experiments in curing.

voted to studies of the nutrition of the tobacco plant and the development of tobacco varieties resistant to diseases, principally black shank and Granville wilt.

Research on the engineering features of curing tobacco is being carried on by the Engineering Department of N. C. State College and the Division of Agricultural Engineering, Bureau of Plant Industry, Soils and Agricultural Engineering of the U. S. Department of Agriculture. This program concerns barn construction, heating units, curing procedure, and the changes in tobacco during the process of curing.

The Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture is doing research on the effectiveness of new insecticides for insect kill and the problem of residue on the cured leaf. One Federal Entomologist devotes full time to the study of the green peach aphid which seems to be potentially a serious pest.

Duke University of Durham, North Carolina is cooperating in limited research with Turkish tobacco and is concerned principally with curing problems and the development of Turkish varieties resistant to black shank and Granville wilt.

In addition to tobacco research, the Tobacco Farm furnishes land, supplies and labor for use by specialists from North Caro-

lina Experiment Station in the development of Granville wilt resistant tomatoes, testing of corn hybrids, and the propagation of cotton selections.

Cultivatable land areas not used for tobacco or crops in rotation with tobacco are planted to corn, small grain or hay for use by livestock on the farm. Much of the marginal wet land is being brought into permanent improved pasture with a view to using it for beef cattle production. A small herd has been started and will be increased to a size in keeping with land area which can best be utilized in supporting livestock. Two purebred Berkshire sows are kept for hog production. Surplus pigs are sold for breeding purposes.

As public service features the farm maintains tobacco seed cleaning equipment for use by farmers. In the fall and winter of 1948-49, 253 growers brought in 4763 ounces of seed to be cleaned. In 1949-50, 16,530 ounces were cleaned. In addition to this service, purebred Berkshire hogs and Jersey cattle sires are kept for public use. Small breeding fees are charged for the use of these animals.

One of the greatest services rendered farmers is the identification of diseased tobacco plant specimens. In recent years this has become almost a full time job for one man during the early growing season.

During the growing season and before harvest begins, approximately two weeks are set aside for visiting by farm groups. These groups are conducted over the farm by Extension Tobacco Specialists who explain the work and outline recommended practices. In the summer of 1949, approximately 5000 attended these meetings. In 1950 attendance was lower when only about 2000 attended. In addition to the regularly scheduled meetings, farmers visit the farm daily. Out-of-state research workers, and foreign agriculturists visit quite frequently, some of them spend weeks or months.

Frequently staff members are called upon to visit farms to diagnose some trouble with tobacco or other crops.

UPPER COASTAL PLAIN TEST FARM— ROCKY MOUNT, N. C.

R. E. CURRIN, JR., *Assistant Director in Charge*

The Upper Coastal Plain Test Farm, established in 1902, is located in Edgecombe County six miles southeast of Rocky Mount. The farm includes 441.9 acres and the soils are mainly of the Marlboro, Rustin, Dunbar, Coxville, and Norfolk series. Elevation above sea level at this location is 100 feet.

A classification of the total farm acreage shows the following land use: cropland, 240.0 acres; permanent pasture, 7.0 acres; rotation pasture, 40.0 acres; idle land, 5.0 acres; and woodland, roads, building sites, etc., 149.0 acres. The research program requires a large acreage, as indicated by land use of the different departments in the 1949 crop year. The breakdown was as follows: agronomy, 72.0 acres; agricultural engineering, 10.0 acres; plant pathology, 17.5 acres; and entomology, 1.0 acre. In addition to land use for field plots, 115.5 acres were used in the general cropping program. This acreage consisted largely of corn produced for use in the hog project.

The farm is becoming reasonably well equipped to take care of the large program of work underway. During the biennium,

Fertilizer storage, implement shed and shop.

a combination implement shed, shop and fertilizer storage building was constructed. Two tobacco barns, each containing three curing compartments, were built during the period. A crops drying building, to be used largely for research in drying peanuts, is under construction at the present time. Two four-room laborers' dwellings were built. These are the first of a group of farm workers' houses that are to be built in an area that has been laid out and planned for this purpose. Repairs have been made to other buildings on the farm, a number of portable hog houses were built and considerable fencing was done for the hog project.

Tractor power has, to a large extent, replaced mule power in farming operations. During the biennium, five head of workstock were sold, the old and badly worn tractors were replaced, and the mechanization program as a whole was improved. At the present time, there are four tractors of varying sizes in use on the farm.

There are eight regular workers living on the farm. In peak seasons, this force is supplemented by temporary labor. The temporary or seasonal labor is, to a large extent, drawn from families of regular workers who live on the farm.

The program of research on this farm is developed and supervised by the Agricultural Experiment Station at State College. The program deals primarily with crops research although swine investigations also have a very important place. Among the agronomy projects, tobacco investigations deal with fertilizations, variety tests, hybrid tests, topping studies, and wireworm studies. Peanut research involves breeding, fertilization, rotations, weed control, spacing, and disease studies. Work with corn consists largely of hybrid tests. Cotton studies include breeding and varieties, fertilization, rotation, and diseases. Soybean research includes breeding and varieties, and diseases. Work with hogs deals largely with breeding, feeding and management.

The farm has been of much service to the public over and above the research functions. Since the hog project was initiated, a number of animals have been sold to farmers in the area, which serves to improve those herds. Also, many 4-H Club and vocational agriculture groups in the area have used the farm as a laboratory in their teaching. Individuals visit the farm frequently in search of information regarding various phases of agriculture. Special field meetings are held each year to permit

farmers to study first hand the work being conducted. Organized field meetings are held for each of the following phases of work: tobacco, swine, peanuts, and corn.

UPPER MOUNTAIN TEST FARM— LAUREL SPRINGS, N. C.

JAMES A. GRAHAM, *Ass't. Director in Charge*

The Upper Mountain Test Farm, located in Ashe County near Laurel Springs, was established in 1944. The elevation is 3,300 feet and the average annual rainfall is 52 inches. The farm includes 420.7 acres, of which 125 are in permanent pasture. There are 72.2 acres of cropland, and woodland occupies 78.5 acres. A total of 145 acres are in use for field plots and for grazing research. An 8.2 acre tract of land was bought and added to the farm early in 1950. The principal soil series are Watauga Silt Loam, Clifton Stony Loam, Watauga Stony Silt Loam, and Tate Gravely Loam.

Major buildings on the farm are: beef barn, sheep barn, burley tobacco curing barn, Turkish tobacco curing barn, implement shed, Superintendent's dwelling, herdsmen's dwellings, and three laborers' dwellings. In addition to these buildings, new structures added during the 1949-50 fiscal year were as follows: An office building with an assembly room and two offices, and with an apple and a potato storage room in the basement; a five-room foreman's dwelling, a general purpose barn (24′ x 30′), and a fertilizer house (28′ x 34′).

Much has been accomplished in the way of clearing and draining land during the past biennium. Approximately 130 acres have been cleared of trees, stumps, and brush and seeded to pasture. Thirty acres of good bottom land have been made usable for crop production by straightening a creek, constructing open drainage ditches, and by laying drain tile. A total of 7,476 linear feet of tile was used in this project.

Pasture development has required considerable effort, yet it has been one of the most gratifying features in the development of the farm. The 120 acres mentioned above have been seeded to orchard grass and ladino clover, fescue and ladino clover, and some areas have been seeded to birdsfoot trefoil. Improved

Beef cattle on newly developed Ladino-orchard grass pasture.

pasture has increase the carrying capacity of the land fourfold. In the process of setting up 16 lots for a grazing experiment, four and one-half miles of fences were built.

A TD6 crawler, with blade, was purchased in 1948 and has contributed much toward the development of pasture and drainage programs. It is also used as a source of power on the steep hillsides. In addition to the bulldozer, we are adequately equipped with machinery to carry on the work.

At present there are seven families living on the farm. The labor force consists of the farm foreman, herdsman, four regular farm laborers and eight temporary laborers that are used in rush seasons.

The research program consists of experiments in animal husbandry (beef cattle and sheep), agronomy (hybrid corn, small grain, pastures, forage crops, alfalfa, burley tobacco, Turkish tobacco, and Rustica), horticulture (apples, tomatoes, potatoes, and lettuce). This work is directed by the N. C. Agricultural Experiment Station, N. C. State College. The Bureau of Plant

Industry, Soils and Agricultural Engineering of the U. S. D. A., and the Southeastern Aromatic Tobacco Company cooperate in the research program.

The beef herd consists of 105 grade Herefords. Since the establishment of the farm, steps have been taken to improve the herd by the use of purebred bulls. It is planned to develop an outstanding commercial herd, one that any farm can produce. The cattle are used for numerous feeding trials and pasture grazing tests.

There are 89 sheep at present and a more or less constant breeding herd of 48 ewes is maintained. Proper management is stressed along with the research work on the production of market lambs.

The hybrid corn and ensilage project is conducted jointly with the N. C. Crop Improvement Association and consists of tests of all varieties in an effort to find ones that are adapted to this area, and also new varieties developed by the N. C. Experiment Station.

Sheep on improved pastures.

Pasture research involves 105 acres of Ladino clover and orchard grass divided into 16 lots to study grazing problems. The forage crop test consists of a number of plots of different pasture mixtures. Some of the mixtures used are Louisiana White Clover and Ladino Clover, Big Trefoil and Ladino Clover, Birdsfoot Trefoil and Ladino Clover, Alta Fescue and Ladino Clover, Ky. 31 Fescue and Ladino Clover, N. C. Fescue and Ladino Clover, Orchard Grass and Ladino Clover, Brome Grass and Ladino Clover, and Timothy Grass and Ladino Clover. The alfalfa trials include the following varieties: Kansas, California, Buffalo, Williamsburg, Hardistan, Argentina, and others.

Burley tobacco work consists of variety tests of strains of burley tobacco. An experiment to determine the feasibility of priming burley tobacco has been carried out along with fertilization tests which include the use of cover crops. Turkish tobacco research is more or less centered at this farm and the Samsun variety is grown in the tests which consist of spacing and fertilization. Research with nicotiana rustica tobacco is devoted mainly to studies of nicotine content of the different varieties and response to different fertilizer treatments.

The apple orchard contains 350 trees and the major endeavor is in orchard management. There are 986 different varieties and lines of tomatoes included in late blight and wilt tests in an effort to find resistant varieties. There are 34 different lines of potatoes being tested to find suitable varieties for this area and two acres of the Kinnebeck variety are grown for seed stock. In addition, varieties of lettuce are being tested.

All tillable land that is not used for research and general pasture is devoted to feed production for livestock in the form of alfalfa for hay and corn for ensilage. Also a recommended variety of hybrid corn is grown for grain, and ladino-fescue and timothy-ladino are being grown for ensilage. Management of the general pastures and crops is directed towards demonstrating proper methods to farmers of the area.

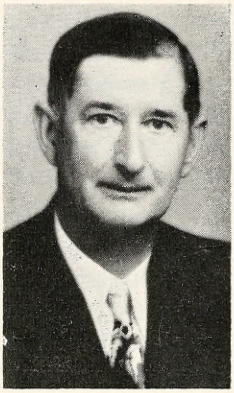
The farm is a source of foundation Irish potato seed stock, and surplus tobacco plants are furnished to farmers in the Turkish Tobacco Program. Due to the fact that the beef herd is still being developed, only cull livestock are sold, but the farmers are given an opportunity to buy these. Ewe and ram lambs are sold to farmers in this area. The facilities here are used to provide a central point for the distribution of western ewes and purebred rams by the Division of Markets. The Ashe County Guern-

sey sale is held here each year and has proven very successful. The Assembly Room is used by the woman's club, home demonstration clubs, and veterans instructors as a meeting place.

A Livestock and Pasture Day is held each year for the benefit of farmers in the area. The first one was held in 1949 and attracted an estimated crowd of 1,200 people. In 1950 the Livestock and Pasture Day was successful with 850 present despite a heavy rain. The annual Corn-Tobacco Days were held with an average attendance of 400 for both years. Approximately 1,500 veterans enrolled in farm training have visited the farm from the different counties in this area. The vocational agriculture teachers have used our facilities for judging contests for their students and they have also conducted tours to the farm. The State Sheep Shearing Contest has been held at this farm for the past two years and the state winner in 1949 became the national winner in Chicago. The nearby county agents have also trained their judging teams at the farm during the summer sessions.

An Agronomy Tour for the county agents and Veteran instructors from southwestern Virginia, and the V. P. I. Agronomy Specialists, was held here in 1949. This farm is the stopping place for several county tours and also the animal industry students' tour from N. C. State College. The annual Ashe county pasture tour begins here at this farm. Many individual farmers of this area visit this farm seeking information and advice.

This farm assists and cooperates with all agricultural meetings in this area, feeder calf sales, cooperative lamb pools, breed associations pertaining to work at the farm, tobacco festivals, and the agricultural program of the Rotary Club.



DR. H. J. ROLLINS

VETERINARY DIVISION

DR. H. J. ROLLINS
State Veterinarian

The Veterinary Division is confronted primarily with the problem of disease control in the various species of domestic animals and poultry, with particular reference to contagious and infectious diseases. Since the production of livestock and poultry forms the foundation of a considerable portion of North Carolina's farm wealth, the control and eradication of disease is essential to continued expansion and the economical production of this source of income. The veterinary service and protection must keep step with this great development in numbers and values of herds and flocks. Frequently it is necessary to enforce regulations which are unfamiliar to the livestock owners and which may conflict with their prejudices or with the interest of the individual. Personal qualities, such as tact and determination, are of the highest importance in obtaining their cooperation.

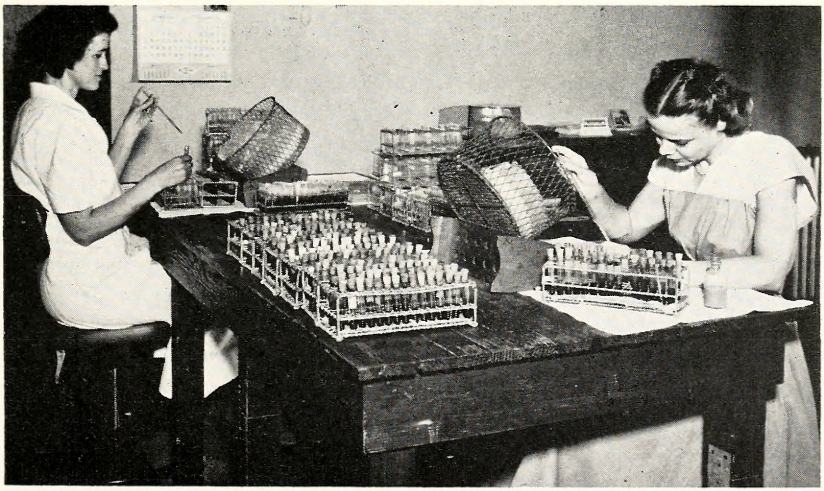
We recognize that the local practicing veterinarian actually forms our first line of defense in any battle for control and eradication of contagious and infectious diseases. The veterinarians throughout North Carolina have, with few exceptions, cooperated wholeheartedly with the Department. Through this cooperation, the Veterinary Division is greatly assisted and in a better position to furnish assistance and to invoke whatever quarantine measures may be necessary to prevent the spread of many diseases.

BRUCELLOSIS

The brucellosis eradication and control program is carried out by the Veterinary Division, cooperating with the U. S. Bureau of Animal Industry and the accredited practicing veterinarians of North Carolina. There was an increase of 23,451 blood samples tested in the laboratory in the fiscal year 1948-49 over the fiscal year 1947-48 and there was an increase of 44,811 tests in 1949-50 over the previous fiscal year.

The cattle population has greatly increased in the last few years in both dairy and beef herds. Mass movements of breeding animals to livestock markets create additional hazards in the control of Bang's disease. A high percentage of the reactors found during the period covered by this report resulted from questionable and illegal importations, mostly by truck. Our records show that we have .7 of one percent infection. With our low incidence of brucellosis infection, it is now time to provide regulations for complete eradication of diseased animals from our herds. Test and slaughter of reactors have given excellent results in cleaning up herds infected with brucellosis.

Vaccination with Strain 19 of calves between the ages of four and eight months has given good results in some herds; but in vaccinated herds in which reactors are retained and poor sanitary measures adopted, desirable results cannot be expected. The eradication of a disease is always a good policy. We believe that the vaccination of adult cattle is not a sound policy and should not be permitted except in rare instances, and then the retaining of reactors should be limited to two or three years. The reaction set up following vaccination in either calves or adults cannot be distinguished by present known methods from the reaction produced by natural infection.



A corner of the Bangs' diagnostic laboratory, showing technicians preparing blood samples for tube agglutination tests.

The ring test is a relatively new diagnostic method for detecting brucellosis in herds. This test has been used on more than 600 herds during this biennium. It is more valuable in states or areas with a low percentage of infection than any other place. Herds showing a reaction to the ring test are blood tested to locate the individual animals that are infected.

SUMMARY OF BANG'S TESTING

	Herds Tested	Cows Tested	No. Reactors	Percentage
July, 1948-July 1, 1949	15,579	174,465	1,416	.8 of 1%
July, 1949-July 1, 1950	22,258	219,276	1,488	.7 of 1%

Total Indemnity Paid

July, 1948-July 1, 1949	$13,182.05	Federal
	13,182.05	State
	$26,364.10	
July, 1949-July 1, 1950	$11,147.68	Federal
	11,147.68	State
	$22,295.36	

Summary Calfhood Vaccination

	No. Calves Vaccinated	No. Herds
July, 1948-July, 1949	1,093	93
July, 1949-July, 1950	1,537	122

BOVINE TUBERCULOSIS

Tuberculosis control work is carried on in North Carolina through the cooperation of the Veterinary Division and the U. S. Bureau of Animal Industry, with practitioners participating in the program. Our testing is largely confined to herds in counties in which the three year accreditation period has expired; in State owned herds; in herds in charitable institutions; in herds to which imported cattle have been added; and in herds suspected of being infected. The practitioners test many of the herds not coming under the above classification.

During the 1948-1950 biennium, the following T.B. testing was done:

	Herds Tested	Cows Tested	No. Reactors
July, 1948-July 1, 1949	4,507	60,236	7
July, 1949-July 1, 1950	6,068	86,273	20

Total Indemnity Paid

July, 1948-July, 1949	$137.50 Federal
	137.50 State
	$275.00
July, 1949-July, 1950	$275.00 Federal
	275.00 State
	$550.00

MASTITIS

The control of mastitis appears to depend largely upon proper management and sanitary practices. A thorough study of mastitis indicates that it cannot be controlled by such methods as are used in the control of tuberculosis and brucellosis. This disease affects mostly dairy cattle throughout the state and causes serious economic losses. A high percentage of this infection is due to injury. Many medicinal preparations, as well as antibiotics, have been used with varying results. However, constant veterinary service and extremely good management are necessary for the control of this disease. Mastitis clinics, an educational program, will be inaugurated in the next biennium with the limited funds that are provided. It is necessary for the control program to be inaugurated to assist in curbing this infection.

ANAPLASMOSIS

Anaplasmosis appears to be on the increase in this State. Most of the cases have been in the Coastal Plains area, although some cases have occurred in some other sections. The death rate is usually not very high but recovered animals become carriers. No satisfactory preventive has been found.

HYPERKERATOSIS (X DISEASE)

Hyperkeratosis, or X disease, has appeared in a few herds in North Carolina. The cause, as indicated by the name "X dis-

ease" is unknown. Although there is little evidence that it is caused by an infectious agent, the possibility has not been completely eliminated.

ANTHRAX

No outbreaks of anthrax have occurred during the period covered by this report. Outbreaks have occurred on a few farms in previous years. Animals on farms where this infection has previously occurred should be vaccinated because anthrax spores remain alive in the soil for a period of years.

JOHNE'S DISEASE

	Herds Tested	Cows Tested	Reactors
1948-1949	4	486	2
1949-1950	3	271	0

SCREWWORMS

Screwworn infestation during the summer of 1949 in many sections of North Carolina, brought the most severe livestock losses ever experienced. The mild winter of 1948-49 permitted the flies to survive far north of their usual habitat. Importation of animals from screwworm infested areas was also an important factor in the spread of this pest. Livestock producers, not being familiar with the identity and control of screwworms in the early days of infestation, suffered severe losses. These losses were materially reduced when producers were informed by local veterinarians and through bulletins and newspaper articles, of proper control measures. The winter of 1949-50 was also very mild and screwworm infestation may be just as bad as it was during the summer of 1949. The livestock producers have been forewarned to make frequent inspections and to use proper control measures to reduce the losses from screwworms.

DISEASES OF HORSES AND MULES

Economic losses from diseases affecting horses and mules are on the decline, as movements of these animals have decreased. The movement and congregation of susceptible animals in stockyards and sales barns continue to cause some spread of infectious diseases, such as pneumonia, influenza, shipping fever, strangles, etc. However, no serious outbreak has been reported.

Equine encephalomyelitis, which affects horses and mules and is also transmissible to man, has not been very prevalent during the biennium covered by this report but some cases have been reported. The disease is caused by a virus and is usually transmitted by biting insects. A satisfactory vaccine is being used for the prevention of this disease. Equine encephalomyelitis is more prevalent in coastal counties of North Carolina than in other sections of the State.

We have had no cases of glanders in horses and mules in a number of years.

HOG CHOLERA AND OTHER SWINE DISEASES

Hog cholera remains by far the most important disease of swine, although other swine diseases have received much publicity and attention. In every sick herd, hog cholera should be eliminated as a possible cause before other treatment is inaugurated. Too much emphasis cannot be placed on this.

The many rather well spaced cholera-immune or partly immune swine herds have served as barriers to preventing severe outbreaks of this disease. On the other hand, the numerous foci of infection created by the use of serum and virus in simultaneous vaccination cannot be ignored as a possible source of the spread of hog cholera. The many instances of vaccination trouble which follow the simultaneous treatment certainly stimulate some thinking that should be crystallized into action by the veterinary profession.

The cause of this trouble cannot be definitely stated, but the accusing finger is pointed towards the use of virus, especially in hogs which are in poor condition and in herds in which there is other infection, or those heavily infested with internal and external parasites. Anti-hog-cholera serum should be used in many herds that are now treated with both serum and virus. It is to be hoped in the near future that hogs can be immunized with a biologic that will not cause the spread of hog cholera.

Quite a number of herds have been infected with intestinal disorders caused by Salmonella organisms; also erysipelas, swine plague and some other diseases. There are serious nutritional and parasitic problems that must be solved if the swine industry is to grow and flourish in this State.

Brucellosis in swine is a serious disease and is particularly important as this strain is highly pathogenic for man and causes

serious economic losses in swine production. This infection in our swine is probably on the increase, due to importations of infected animals from those areas which have a much higher infection than we have in this State. It is necessary that we exert more effort in the control of this disease, with particular reference to purebred herds. The purebred producers should adopt the policy of accepting only animals from brucellosis-free herds.

In the control of brucellosis in swine, it is necessary to test the entire herd, because swine infected with brucella suis do not produce agglutinins in uniform amounts and the testing of a few individuals in the herd is no assurance that the disease is not present. We have adopted two plans for brucellosis control:

Plan No. 1 is to dispose of the entire herd, clean and disinfect the hog barns and premises, and replace the herd with swine from herds free from infection—placing the new herd on clean ground, if possible. This method is preferable in small herds or in commercial herds, provided safe replacements are procurable.

Plan No. 2 is to separate weanlings negative to the blood test from an infected herd and maintain them on clean ground, and to dispose of the infected herd when marketable. This is the preferred method in valuable purebred herds where breeding for improved blood lines is practiced—especially in large herds. Under this plan the pigs are weaned at eight weeks of age, blood tested, and negative animals placed in clean surroundings, as remote as possible from the infected herd. The new negative group is tested several times up to breeding age and all pigs showing reaction to the test are removed immediately.

RABIES

This Division operates under the rabies law, as amended. The requirements of this law are being carried out by the local county governments and health officers.

BREEDING IMPROVEMENT AND PULLORUM DISEASE ERADICATION WORK

Although there has been no significant increase in either the production capacity or in the number of hatcheries in operation in the state during the past two years, there has been a tremendous increase in the number of birds tested to supply hatching eggs to these hatcheries. One of main reasons for this big

increase was the fact that many hatcheries and several hatching egg dealers are exporting hatching eggs into Florida, South Carolina, Georgia, Mississippi, Alabama, Texas, and Arkansas. Even with the great increase in the volume of testing, the incidence of pullorum disease has been reduced to a minimum. This testing work was done by 16 State inspectors and 102 authorized testing agents. The stained antigen rapid whole blood method of testing was used for chicken testing, and all turkeys were tested by the tube method.

Summary	Chickens		Capacity	
	48-49	49-50	48-49	49-50
No. of hatcheries in National Plan	215	212	12,246,000	11,724,010
No. of hatcheries not in Plan	5	5	210,364	210,364
	Turkeys		**Capacity**	
	48-49	49-50	48-49	49-50
No. of turkey hatcheries	8	9	199,000	212,000

PULLORUM TESTING

	Chickens		Turkeys	
	48-49	49-50	48-49	49-50
Number of flocks tested..	2,077	3,422	27	28
Number of birds tested..	806,701	1,487,451	13,367	26,249
Number of reactors among these birds	1,377	1,976	279	102
Per cent positive (based on number of birds tested)	0.14	0.13	2.08	0.39
Number of samples tested (retests included) ...	1,087,552	1,936,829	28,618	51,230
Number of flocks 100% tested and with no reactors, (including both Pullorum Passed and Pullorum Clean flocks)	1,934	3,193	23	25
Number of Pullorum Clean flocks	1,891	2,441	1	5
Number of Pullorum Clean birds	407,451	1,124,451	899	2,007

NEWCASTLE DISEASE

Several outbreaks of Newcastle disease have occurred in North Carolina in the last two years. The most serious one appeared county-wide in Wilkes County. Several meetings were held in the county to discuss the control of this disease. Both killed and live virus vaccines were used in checking the outbreak. Killed vaccine is recommended in instances where the conditions are favorable, as this product does not spread the disease.

POULTRY DIAGNOSTIC LABORATORY

A poultry diagnostic laboratory was equipped and started operating in June, 1948. Appropriations for an additional diagnostic laboratory were provided and this laboratory will be in operation in the western part of the State within the next six months. The laboratory will be a great aid in the diagnosis and control of infectious diseases. Specimens submitted to the laboratory will increase as the livestock and poultry growers become better acquainted with its service.

A new diagnostic and research laboratory is urgently needed to improve our program of control and eradication of infectious diseases of livestock.

PUBLIC LIVESTOCK AUCTION MARKETS

There are 48 livestock auction markets scattered in every section of North Carolina. We have continued to inspect and supervise these markets in accordance with the law, although it has been impossible for us to inspect many of the markets as frequently as we deem necessary because we do not have sufficient personnel available. The livestock auction markets are a huge disease-control problem and more adequate inspection is necessary. The high prices paid and the demand for cattle has encouraged dealers to truck in cattle from out of state without health certificates in violation of the livestock sanitary regulations. The health status of these animals is unknown and questionable; therefore, it is dangerous to add them to North Carolina herds. Some violators have been convicted, which has a moral influence on controlling this practice.

MISCELLANEOUS

We have continued as far as possible to look after the health, testing, and vaccination of livestock on the State owned farms. A large part of this work consists of vaccinating hogs, the most of which are fed garbage and are, therefore, subject to hog cholera unless properly vaccinated.

Requests for the investigation of disease outbreaks in this State are on the increase. About 20 new veterinarians located in the State in June, 1950, and this will greatly assist us with the veterinary service.

No cattle fever tick or scabies have been encountered during the period covered by this report.

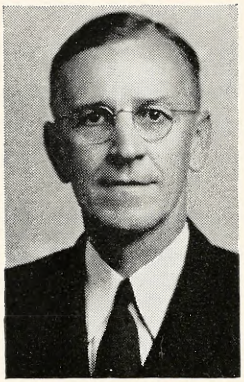
PERSONNEL CHANGES AND ADDITIONS

Dr. L. J. Faulhaber, State Veterinarian, retired from service on July 8, 1949, and was succeeded by Dr. H. J. Rollins, of Rockingham, North Carolina.

Dr. R. R. Jeter was employed March 16, 1949.

Dr. Glenn P. Deal, formerly with this Department, resigned June 15, 1950.

Dr. T. F. Zweigart was employed June 17, 1950.



A. B. FAIRLEY

WAREHOUSE DIVISION

A. B. FAIRLEY
Superintendent of Warehouses

During the 1948-1950 biennium the State Warehouse System licensed for storage of cotton 90 warehouses having a capacity of 560,000 bales. While the 1949-1950 crop was small, the greater part of the crop was handled by the licensed warehouses and with the Loan Cotton carried over from the 1948-1949 season, the majority of the warehouses were filled to near capacity.

In addition to the cotton warehouses the State Warehouse System licensed six warehouses for storage of peanuts and three for storage of lespedeza seed. Approximately 2,000,000 pounds of lespedeza were stored, being handled under the Government Loan.

The demand for licensed storage for seed and grain increases each year and a steady growth of this kind of storage is anticipated.

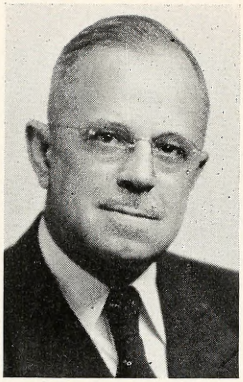
The warehouse at Norlina was sold for $2,000.00.

Also during the biennium loans were made on warehouse properties at the Union County Warehouse, Monroe, the Claude Gore Sons, Inc. warehouse property, Rockingham, and the Patterson Bonded Warehouse, Fayetteville. In addition applications for loans have been approved on the warehouse in Concord, a warehouse in Roanoke Rapids and another in Seaboard.

FINANCIAL STATEMENT OF THE WAREHOUSE SYSTEM

Cash on Hand Principal Fund	Cash on Hand Supervision Fund	Loans First Mtges.	Invested in Government Bonds
	June 30, 1948		
$42,306.07	$63,221.74	$139,650.00	$550,000.00
	June 30, 1950		
$49,326.07	$43,209.69	$134,630.00	$550,000.00

The Warehouse Division maintains a cotton classing service, in cooperation with the U. S. Department of Agriculture. In the picture above cotton is being classed for grade and staple at the Cotton Classing Building in Raleigh.



C. D. BAUCOM

WEIGHTS AND MEASURES DIVISION

C. D. BAUCOM

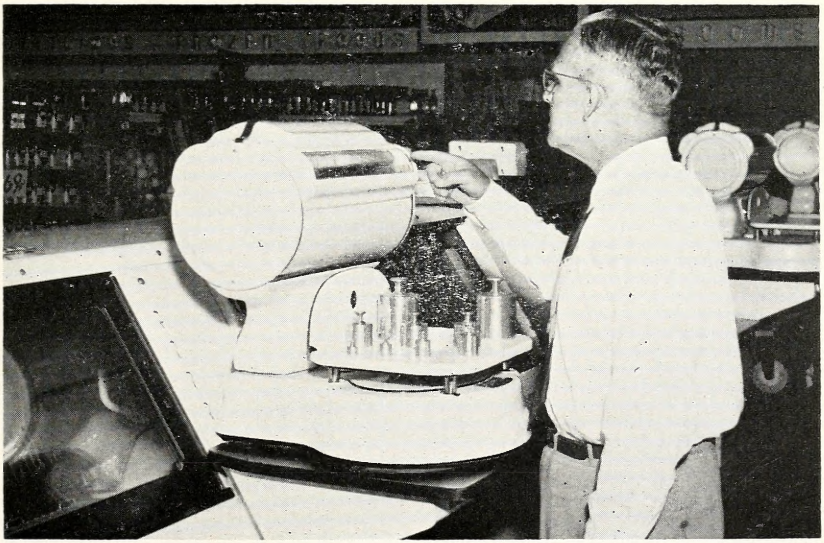
Superintendent of Weights and Measures

The Uniform Weights and Measures Law of North Carolina was enacted by the General Assembly in 1927. It has been amended many times since in order to keep abreast with changes in methods of merchandising, so as to amply protect both the buyer and the seller. Authority is given the Board of Agriculture to make rules and regulations consistent with the intent of the law. To date 25 regulations have been written, six of which have been repealed. The latest regulation deals with the sale and safety of liquefied petroleum gas, a function which was transferred by the last General Assembly from the Insurance Department.

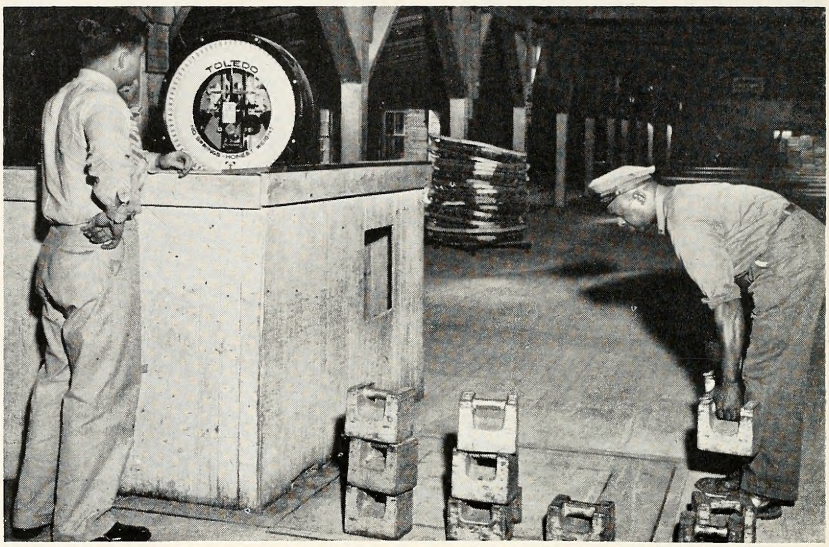
The duties of this Division consist of the inspection for accuracy of large-capacity platform scales such as are used by coal dealers, fertilizer factories, cotton gins, junk dealers, granite quarries, road building contractors, motor truck lines, tanneries and the like; all scales and weighing devices used in grocery stores, drug stores, pre-packaging centers and food processing establishments; testing for accuracy the scales used in tobacco warehouses; rechecking weights of piles of tobacco offered for sale in tobacco warehouses; the licensing of public weighmasters; the registering of scale mechanics; the testing of concrete blocks for compression strength; and the inspection of curing units in tobacco barns for safety.

We referee and test electric meter and water meter disputes, test for accuracy the receiving scales at dairy plants. We test scales at all livestock auction markets, check for accuracy ice and coal deliveries and pre-packaged goods, check for accuracy scales used in the sale of Irish potatoes, tomatoes, cucumbers, and other fresh vegetables. We check for accuracy weight and/or yardage of binder twine and thread, and test and inspect for type approval all weighing and/or measuring devices before they may be sold in this State, thus assuring the purchaser that the device he buys can be depended upon when used under normal operating conditions. During the last biennium our inspectors visited 17,230 places of business, checked 37,419 scales, 21,911 weights, 152,921 packages and 1,183 deliveries.

Check-weighing packages put up in advance of sale. During the past biennium 152,921 such packages were re-weighed.

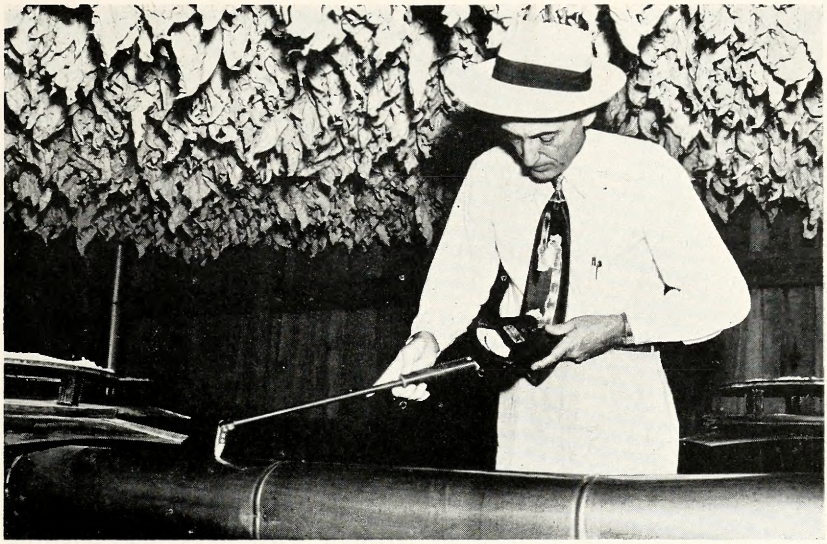


Testing one of the 60,000 scales used in grocery stores in this State.



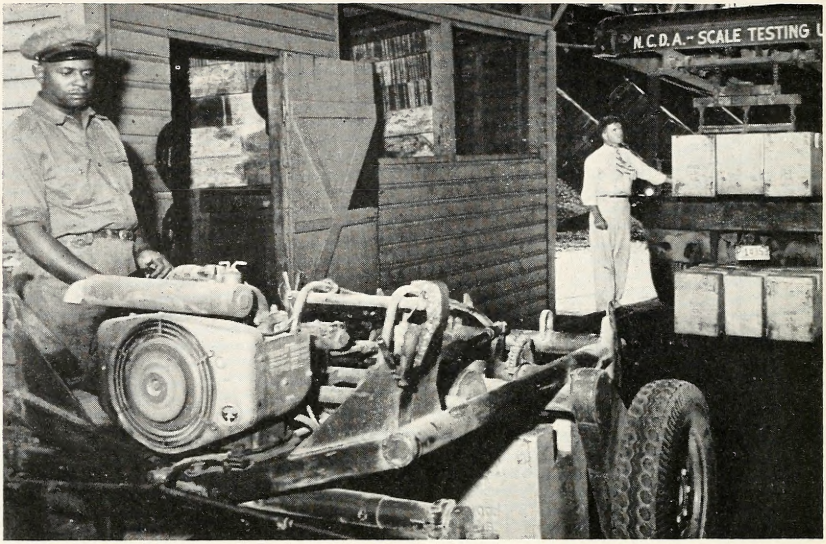
Testing one of the 800 scales used on tobacco warehouse floors.

Check weighing a pile of tobacco previously weighed by the warehouse. Last year over a million and a quarter pounds of tobacco were reweighed. Farmers look for the seal of approval on the scale.



Checking for fire hazard in a tobacco barn. This inspector is checking temperature of exposed pipes, which, if heated above 500 degrees, are dangerous. There are 268,000 tobacco barns in the State, and since this service was begun the number of tobacco barns burned each year has been reduced approximately 75 percent, while the insurance rate has been reduced 50 percent.

This inspector is checking for accuracy a pharmaceutical scale typical of those used in the 800 drug stores of this State.



Checking a large capacity scale. The machine in the foreground is a powered pick-up device used in moving the three 1,000-pound test weights to different positions. More than 3,600 such large capacity scales are used in this State.

To ensure that concrete blocks are strong enough to carry weights intended, the General Assembly of 1947 placed the responsibility of sampling for commercial laboratory testing in the Weights and Measures Division. Sample test blocks are taken from the manufacturers' stock piles and also from piles delivered to building sites. The average strength of concrete and cinder blocks has doubled since this law became effective.

GASOLINE AND OIL INSPECTION DIVISION

By act of the General Assembly of 1949, the Gasoline and Oil Inspection Division was transferred from the Revenue Department to the Department of Agriculture, effective immediately upon ratification. However, because of budgetary complications this was not actually done until July 1, 1949. Immediately after transfer, a survey was made of activities being conducted, results obtained, and accomplishments anticipated by such law, which resulted in the formation of a new Gasoline and Oil Inspection Board, the revision of rules and regulations, the establishment of higher standards for gasoline quality, and a revised method of operation.

On July 1, 1950, by agreement with the Commissioner of Revenue and the Assistant Director of the Budget, the supervision of the auditors was transferred back to the Revenue Department.

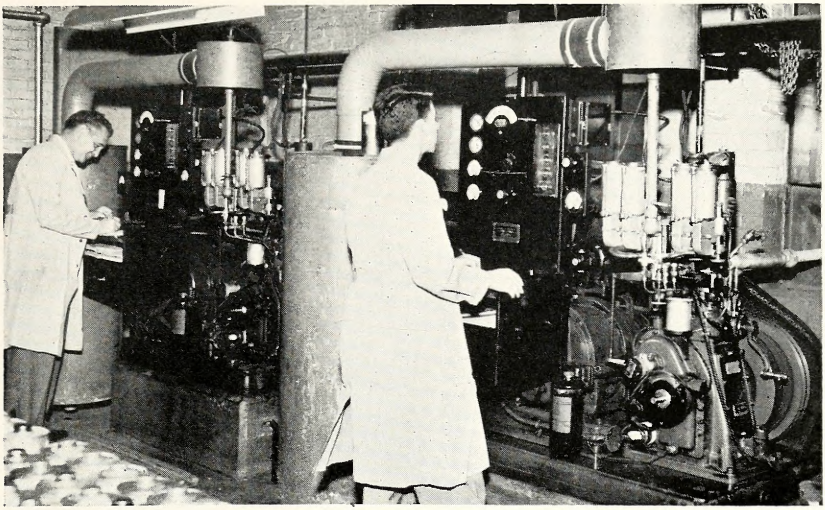
One of the revisions in the rules and regulations was to provide for the registration of pump mechanics, and the vesting in them under specified circumstances the authority to release pumps or measuring devices condemned by State inspectors as soon as said pumps or devices had been repaired and tested by a registered mechanic. To date, 268 pump mechanics have been registered. These mechanics will keep in operation approximately 36,000 gasoline pumps, to say nothing of the meters at terminals and on delivery trucks, or of kerosene or oil pumps.

The revised method of operation has definitely increased the number of pumps inspected as indicated by the last quarterly report. During the last quarter, we inspected 17,009 gasoline pumps, 7,757 kerosene pumps, 1,141 gasoline meters, 1,255 liquid measures, 1,953 oil bottles. We calibrated and sealed 210 tank trucks and collected and analyzed 6,118 samples of gasoline and 2,032 samples of kerosene. When analyzing gasoline, the following facts must be determined: the octane number, the sulphur and gum content, and the distillation range; for kerosene, the flash point and the percent of residue. The main purpose for analyzing kerosene is to determine its safety, especially as regards explosions when used in lamps or in space heaters.

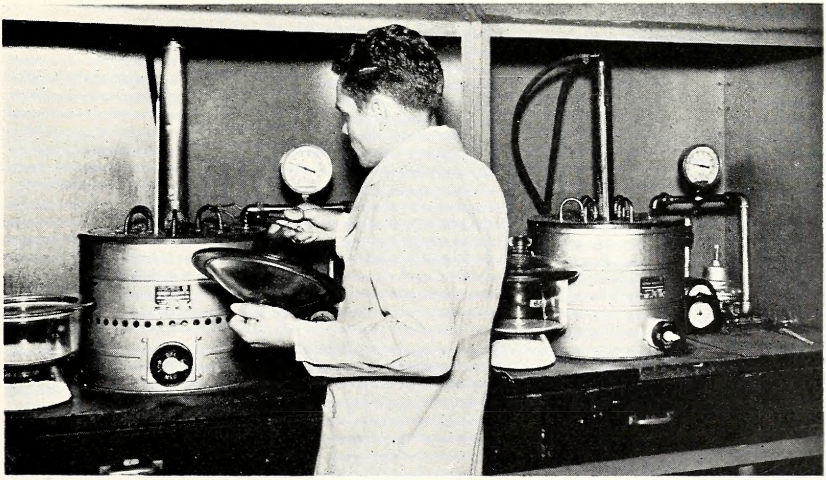
In order to analyze the samples more quickly, twelve portable laboratories are employed which take the sample and analyze same immediately upon the premises, and the further sale of any product which does not meet the standard specifications or which might be dangerous is stopped.

Inspecting for accuracy one of the 36,000 pumps used for dispensing gasoline in this State.

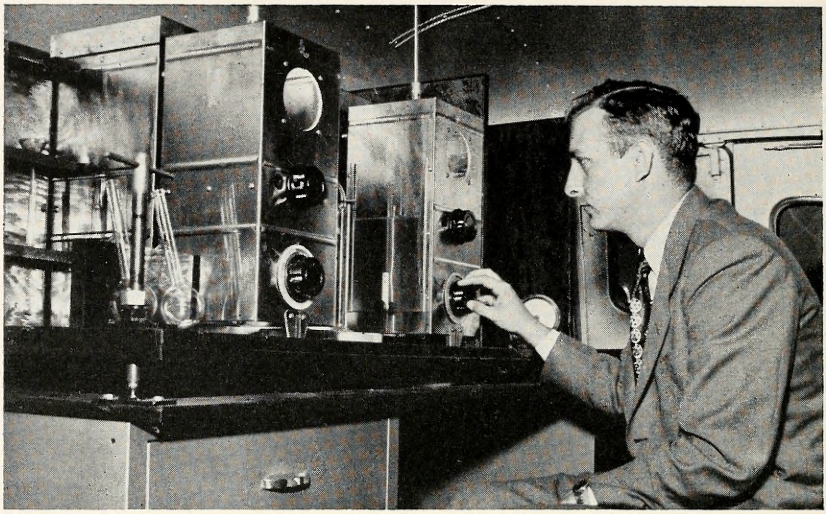
An inspector taking a sample of gasoline, which will be sent to the laboratory for complete analysis. Every brand of gasoline is sampled and analyzed once each week.



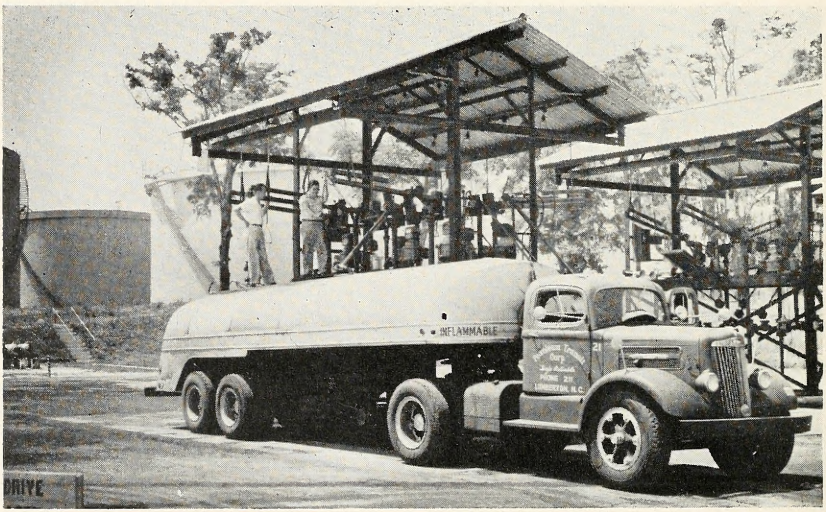
Testing gasoline for octane number at the main laboratory. These are precision machines, the same as those used by the National Bureau of Standards, and require skilled chemists as operators.



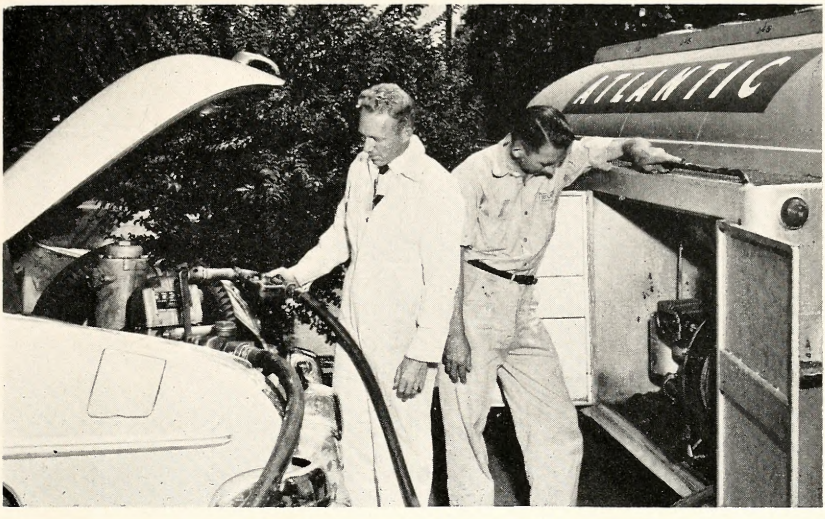
Gum is one of the most dangerous substances found in gasoline. Here the chemist is testing for gum content and to ascertain whether or not the sample comes within the minimum limits allowed.



Interior of one of the 12 portable laboratories. These laboratories are used to run distillation tests on gasoline and kerosene, and flash-point tests on kerosene.



Checking a large capacity meter at a bulk plant. In this State it is lawful to use and bill according to these print-ticket meters under certain conditions.



A large number of local delivery fuel oil trucks are equipped with meters. This picture shows a "surprise check" on a delivery being made through such a meter.